November 2017

The Impact of Traumatic Event Exposure in the Emergency Medical Services: A Weekly Diary Study

Stephanie A. Andel
University of South Florida, sandel@mail.usf.edu

The Impact of Traumatic Event Exposure in the Emergency Medical Services:

A Weekly Diary Study

by

Stephanie A. Andel

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Psychology
College of Arts and Sciences
University of South Florida

Major Professor: Paul E. Spector, PhD
Tammy D. Allen, PhD
Michael D. Coovert, PhD
Thomas E. Bernard, PhD
Kristen Salomon, PhD

Date of Approval:
October 20, 2017

Keywords: emotion regulation, trauma, emergency medical services, PTSD

Acknowledgments

I would first like to thank my advisor, Paul Spector, for all of his guidance and mentorship. Throughout my graduate school training, he has always been there to offer his support, knowledge, and expertise so that I could reach my best potential. I attribute so much of my success as an Industrial/Organizational psychologist to his mentorship, for which I am incredibly grateful.

Second, I would also like to thank the CDC/NIOSH and the National Registry of EMTs for their indispensable support on this project, and to Tammy Allen, Kristen Salomon, Michael Coovert, and Tom Bernard for serving on my dissertation committee. The success of this dissertation is largely due to their contributions to the project.

Third, I would like to thank Shani Pindek. She was incredibly supportive throughout this dissertation process. Whenever I had questions about my statistical analyses, she was unwavering in her willingness to help me find the answer. I have so much gratitude for her support.

Fourth, thank you to my cohort (Kim French, Britany Telford, Scott Ramsay, and Seulki Jang) for your friendship throughout the past five and a half years. I am so grateful that we got to go through this graduate school journey together.

Last but not least, thank you to Kevin Martyn, Crystal Andel, Rob Andel, Kendra Bacon, Chris Bacon, and baby Henry. I am so lucky to have you as my family, and I would not be where I am today without your love, patience, and guidance. Thank you so much for always being there for me.

Table of Contents

List of Tables

List of Figures

Abstract

Emergency Medical Service (EMS) professionals are consistently exposed to a variety of traumatic events on the job, such as cases that involve the death or injury of a patient, being physically threatened, or encountering a mass casualty incident. Not surprisingly, research has found that such traumatic exposure has major implications, as it has been related to a plethora of negative strain outcomes such as posttraumatic stress (PTS) symptoms and burnout. However, at this point, research has not empirically examined the mechanisms by which these traumatic events lead to strain. Therefore, this study aims to further investigate these mechanisms by incorporating the role that emotion regulation (i.e., expressive suppression) plays in this process. Further, this study investigates various moderators in this process, including one individual difference factor (i.e., implicit theories about emotion expression) and two contextual factors (i.e., social support and organizational constraints).

To test the links in the aforementioned process, a weekly diary study was conducted online with 200 current EMS professionals. Specifically, participants completed a baseline survey (Time 0) that measured trait-level variables and demographics. Then, participants completed 10 weekly diary studies that included measures of exposure to traumatic events, negative affective reactions, expressive suppression, and strain outcomes. Multilevel structural equation modeling was used to test the study hypotheses.

Results of this study show that within person, traumatic event exposure was related to strain. Further, although traumatic event exposure was not consistently related to expressive suppression, the positive link between expressive suppression and strain was consistent. Additionally, organizational constraints were found to serve as a moderator in the relationship between expressive suppression and strain, such that higher organizational constraints exacerbate this relationship. Overall, these results provide a better understanding of the process that links traumatic event exposure to strain in the EMS profession. This research has implications for organizations, as it examines various factors that may be addressed in order to ensure that EMS professionals are better equipped to deal with these unfortunate exposures. Ultimately, the results of this study will hopefully prove helpful in devising interventions to enhance the wellbeing of EMS professionals in the wake of exposure to traumatic events.

Chapter One:

Introduction

Emergency Medical Service (EMS) personnel are frequently exposed to a myriad of traumatic events, which are defined as a situation in which an individual, "experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (American Psychiatric Association, 2013, p. 218). Such traumatic events on the job may include witnessing the illness or death of a child, making a death notification, or coming across a decaying corpse (Donnelly & Bennett, 2014). These events can invoke intense emotional responses, and research by Regehr, Goldberg, and Hughes (2002) found that when paramedics develop an emotional connection to a victim, they experience increased distress following the event. The general purpose of this study is to investigate how emotion regulation may be an important mechanism used by EMS personnel to cope with exposure to a traumatic event.

Prior studies have shown that exposure to these traumatic events is related to various negative wellbeing outcomes. For instance, in a sample of ambulance workers, one study found that 20-36% of individuals experienced high levels of burnout (Alexander & Klein, 2001). Further, research by Bennett, Williams, Page, Hood, and Woollard (2004) showed that almost 10% of their EMS sample met the criteria for clinical depression, and meta-analytic evidence by Berger et al. (2012) found that almost 15% of ambulance workers experience posttraumatic stress disorder (PTSD). Such

traumatic event exposure has also been linked to other negative outcomes, such as PTSD symptoms, anxiety, sleep problems, and marital tension (Alexander & Klein, 2001; Donnelly & Bennett, 2014; Halpern, Maunder, Schwartz, & Gurevich, 2011; Sterud, Ekeberg, & Hem, 2006).

These negative outcomes are unpleasant in and of themselves, but they are also exceptionally critical to address because high levels of PTSD-related symptoms have ultimately been linked to high suicide rates among first responders (for a review, see Stanley, Hom, & Joiner, 2016). In fact, a recent survey of a large international sample of EMS professionals reported that suicide ideation rates were as high as 37%, and suicide attempt rates were as high as 6.6% (Newland, Barber, Rose, & Young, 2015). Fortunately, efforts have recently begun to take place in order to raise awareness of this issue. For instance, in 2014, a nonprofit organization called the Code Green Campaign was founded in order to educate the public about mental health within the emergency services, and to also provide resources and assistance to those who are impacted by these problems (www.codegreencampaign.org). Further, more recently in 2016, a training course for fire and EMS professionals called the Emotional Trauma Life support (ETLS ©) course was developed and launched by the Seriah Corporation in order to train first responders about dealing with potentially emotionally traumatic situations on the job (www.etlsems.com).

However, there is much more that needs to be done, especially in terms of academic research. For instance, in order to develop better interventions that will help in combating the negative impact of traumatic events, researchers need to better understand the mechanisms by which these stressful encounters leads to such negative outcomes. At

this point, limited research has been conducted to examine such mechanisms in the EMS field. For instance, some research has found that factors such as trait-level coping styles (e.g., Shakespeare-Finch, Gow, & Smith, 2005), and perceptions of personal control (e.g., Regehr & Millar, 2007) influence the likelihood that traumatic event exposure on the job will lead to strain outcomes. However, there is much more to be known in this process. For instance, to my knowledge, research has not yet taken a within-person perspective in order to examine the role of emotion regulation strategies in this process.

The lack of thorough investigation into the role of emotion regulation is curious, as the emotional labor requirements in EMS are quite high (Boyle, 2005). As noted by Mastracci, Guy, and Newman (2012), public service jobs, such as those within EMS, "require emotional labor because they involve working directly with people and, more crucially, because they target vulnerable populations or people in vulnerable situations" (p. 6). For instance, when responding to a work call, EMS professionals must manage their own emotions in order to ensure that patients and their families do not sense their negative emotions, such as sadness or disgust. If these EMS professionals do not do enough to mask these negative emotions, then they run the risk of patients or family members going into shock (Mastracci et al., 2012). Due to the potential for such scenarios, emotional display rules are generally mandated within EMS organizations, either formally or informally (Tracy & Tracy, 1998).

Therefore, the current study aims to fill this gap by conducting a within-person investigation into the role of emotion regulation in this relationship. Specifically, I aim to investigate whether the use of one particular emotion regulation technique, namely expressive suppression, may be one important mechanism by which traumatic event

stress leads to strain. To investigate this issue, this study uses the process model of emotion regulation (Gross, 1998b) and the transactional model of stress (Lazarus & Folkman, 1984) to propose a potential process by which traumatic exposure on the job relates to psychological strain in the form of burnout and PTSD-related symptoms.

The current work aims to extend the literature in four ways. First, this study utilizes a within-person weekly diary study design in order to examine episodes of traumatic event exposure. This answers a recent call by Grandey and Gabriel (2015) who note that researchers should move away from between-level analysis of emotion regulation, as this construct demonstrates meaningful within-person fluctuations (e.g., Scott, Barnes, & Wagner, 2012). Such fluctuations are largely ignored, as research examining emotion regulation (or related constructs, such as coping) after traumatic event exposure tends to measure these variables as between-individual, trait level constructs, and thus do not consider the fact that these strategies may vary across situations (e.g., Shepherd & Wild, 2014). Other advantages of the current study design include less reliance on retrospective recall due to frequent measurement (Fisher & To, 2012), and also this design allows for testing the potential that the effect of study variables can culminate over time to increase strain outcomes.

Second, this study follows further recommendations by Grandey and Gabriel (2015) by extending beyond the deep acting and surface acting distinction in order to better understand the use of emotion regulation strategies in the workplace. These authors noted that the deep acting and surface acting constructs are very broad and may be confounded with other variables. This is in line with work by Mikolajczak, Tran, Brotheridge, and Gross (2009) who note that surface acting is broad in the sense that it

consists of both expressive suppression *and* faking an unfelt emotion. This is especially pertinent, as research by Lee, Lovell, and Brotheridge (2010) found differential results for the effects of expressive suppression and faking emotions on outcomes such as burnout. Further, Diefendorff, Richard, and Yang (2008) note that inherent in the definition of surface acting is that individuals must be cynical in order to engage in this form of regulation, and thus surface acting can never be "sincere". However, this construct definition of surface acting is restrictive, as the authors argue that individuals may engage in suppressing their feelings for "sincere *or* cynical reasons" (p. 499). Thus, instead of examining the broad construct of surface acting, the current study follows the lead of Diefendorff et al. (2008) by investigating the narrower construct of expressive suppression in the workplace.

Third, research that has investigated the use of emotion regulation at work is most often conducted within the customer service industry (Cheung & Lun, 2015). While such research has been vital to our understanding of emotion regulation, more research needs to be conducted in order to investigate the impact that emotion regulation techniques have on employees *outside* of the customer service arena. This is important, as the research conducted within customer service settings may be particularly unlikely to generalize to the emergency medical services, where employees must work in unique environments that are often uncontrolled, high-risk, messy, and ever-changing (Miller, 1995). Thus, this research aims to fill this gap by investigating the role of emotion regulation within the emergency medical services.

Finally, this study builds upon past research by examining various factors that are feasible for organizations to address in order to improve wellbeing outcomes following

exposure to traumatic events. For instance, this study examines the role of two contextual factors, namely social support and organizational constraints, in moderating the relationship between expressive suppression and strain. If these factors do indeed serve to buffer this hypothesized negative effect, then organizations should consider directing interventions toward improving these factors in order to ultimately enhance the resources available to EMS professionals after experiencing traumatic events. Such interventions may be conducted in tandem with attempts to provide emotion regulation training to EMS professionals in order to ultimately assist them in handling the emotional demands that arise in the wake of traumatic event exposures.

Theoretical Overview and Hypothesis Development

Transactional Model of Stress

According to the Transactional Model of Stress (Lazarus & Folkman, 1984), being subjected to a stressor, or aspects of the environment that demand an adaptive response, leads an individual to make sense of what has happened by making two appraisals. Each of these appraisals has a distinct function and refers to different sources of information. During the initial appraisal, the individual will assess the objective stressor in order to decide whether or not it is should indeed be perceived as a stressor. Lazarus (2006, p. 76) notes that this appraisal takes into account whether the situation is "relevant to one's values, goal commitments, beliefs about self and world, and situational intentions". This primary appraisal is in turn associated with an emotional experience that ultimately informs the second appraisal (Smith & Lazarus, 1993). During this secondary appraisal, the individual will appraise his or her ability to cope with the stressor. Typically, individuals will either engage in emotion-focused coping (i.e., efforts to

regulate the emotional distress that arose from the stressful situation) or problem-focused coping (i.e., efforts to directly target the stressful situation). If one feels that he or she does not have the resources to adequately deal with the stressor, or if the selected coping mechanism is not effective, then the individual will experience strain in the form of acute affective and physiological arousal. When one experiences continued activation of stress appraisal, the acute affective and physiological arousal will eventually turn into chronic strain symptoms.

Gross' (1998) Process Model of Emotion Regulation

According to Gross (1998b), emotions are brief responses to internal or external stimuli that affect our behaviors. While there are times when our emotional responses are appropriate (e.g., feeling happy after receiving a gift from a loved one), there are other times when our emotional responses are neither appropriate nor adaptive to the situation (e.g., feeling angry at another driver). In such times when emotional responses are not adaptive, we aim at regulating our emotions. Gross (1998b) defines emotion regulation as, "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (p. 275). According to Gross (1998b), the process of emotion regulation begins with an evaluation of the emotional cues that one is experiencing. This evaluation in turn leads to attempts at regulating these emotional cues. There are various ways by which individuals may engage in emotion regulation, and Gross (1998b) developed a framework that outlines these different techniques. At the broadest level, this process model differentiates between *antecedent-focused* regulation techniques and *response-focused* regulation

techniques. These techniques intervene at different points in the "emotion-generative process", and thus outcomes will differ depending on the technique used.

Specifically, *antecedent-focused* regulation techniques refer to methods that we use to regulate emotions *before* the emotional experience has become fully activated. Examples of antecedent-focused strategies include *situation selection* (i.e., actively avoiding or approaching an emotional situation), *situation modification* (i.e., modifying the emotional situation in order to change its emotional impact), *attentional deployment* (i.e., directing one's attention either toward or away from the emotionally relevant situation), and *cognitive change* (i.e., altering the way in which one appraises the emotional situation in order to change its meaning).

Response-focused regulation techniques, on the other hand, refer to strategies that we use to regulate emotions *after* the emotion has been experienced. Specifically, these are attempts to change one's experiential, behavioral, and physiological responses to an emotional situation. Examples of response-focused techniques include strategies such as *relaxation* (i.e., inducing direct relaxation of the muscles), *substance use* (i.e., consuming medicines, drugs, or alcohol to alleviate the emotional experience), *verbal or physical aggression* (i.e., expressing the tense emotions that are experienced), and *expressive suppression* (i.e., masking the behavioral expression of the experienced emotion).

Expressive suppression is one of the most commonly examined response-focused techniques (for a review, see Gross, 2010), and will be the central focus of the current study. As discussed below, this technique is generally considered to be maladaptive, as it is linked to a variety of negative wellbeing outcomes (Gross, 2010). Further, as will also

be discussed, research has found this strategy to be consistently utilized in Emergency Medical Service (EMS) occupations (e.g., Boyle, 2005; Regehr et al., 2002).

Emotion Regulation as the Link between Traumatic Exposure and Wellbeing

In this study, traumatic event exposure is conceptualized as a stressor, and in accordance with the transactional model of stress (Lazarus & Folkman, 1984), should relate to negative strain outcomes. Specifically, this study considers two groups of strain outcomes, namely burnout and post-traumatic stress (PTS) symptoms (i.e., anxiety, depression, sleep disturbance, and rumination). Burnout is often described as "a state of mental weariness" (Schaufeli & Bakker, 2004, p. 294), and is primarily characterized by emotional exhaustion and fatigue. Further, PTS symptoms occur as a response following the experience of a traumatic event. PTS symptoms serve as the precursor to PTSD, which may be diagnosed when individuals display a certain number of PTS symptoms for more than one month (American Psychiatric Association, 2013). PTS is commonly characterized by various symptoms, such as hyperarousal, persistent re-experiencing of the event, negative mood and cognition, and persistent avoidance of stimuli that are associated with the traumatic event (American Psychiatric Association, 2013). The current study focuses upon the first three symptoms. Specifically, this study includes measures of sleep disturbance (as an indicator of hyperarousal), anxiety and depression (as indicators of negative mood) and rumination (as an indicator of persistent re-experiencing of the event).

Past research has generally found support for this stressor-strain link, as evidence suggests that traumatic events are consistently related to all of the aforementioned

outcomes (i.e., Alexander & Klein, 2001; Bennett et al., 2004; Berger et al., 2012). I expect to replicate these past findings, and therefore, I hypothesize the following:

> ***Hypothesis 1:*** Within person, traumatic event exposure will be positively related to (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (e) burnout.

Further, the process model of emotion regulation can be applied to the transactional model of stress in order to provide an explanation as to *why* traumatic event exposure may lead to psychological strain. These models are particularly compatible, as emotion regulation techniques are considered to be emotion-focused coping strategies when they are used to deal with a stressor (Compas et al., 2014; Gross, 1998b).

Specifically, I propose that traumatic event exposure leads to the use of expressive suppression. Next, I suggest that expressive suppression will ultimately relate to strain outcomes (i.e., burnout and PTS symptoms). Additionally, I propose one individual difference variable that will moderate the relationship between negative affective reactions and expressive suppression. Finally, I propose two contextual factors that will serve as moderators in the process that links expressive suppression to strain. See Figure 1 for a model that depicts all of the study hypotheses. Below, I will discuss each of these proposed relationships in detail.

Expressive Suppression as a Form of Emotion Regulation

As previously mentioned, EMS personnel are often exposed to traumatic events on the job (for a review, see Regehr & Bober, 2005). Examples of these traumatic events include seeing someone die, encountering an adult who has been badly beaten, and encountering the body of someone who has recently died (Donnelly & Bennett, 2014). In

response to such traumatic events, individuals often experience an intense affective response (Halpern, Gurevich, Schwartz, & Brazeau, 2009). This is in alignment with the transactional model of stress, which posits that individuals will experience an emotional response to stimuli that is appraised as stressful (Lazarus & Folkman, 1984; Smith & Lazarus, 1993). These affective responses tend to be negative in nature, and may range from emotions such as frustration, guilt, sadness, and anger (Halpern et al., 2009). In describing the emotions following a particular critical incident, one EMS professional noted, "So, I think it was also part of, like, oh my God, maybe if we'd done things differently, we could have saved her, you know. Kind of a guilt feeling…" (Halpern et al., 2009, p. 181).

When such negative emotions come to fruition, EMS professionals may often feel the need to regulate their emotions, or at least regulate the *expression* of emotions, in order to get the job done. To do so, individuals may choose to engage in expressive suppression. As aforementioned, expressive suppression is one type of response modulation emotion regulation strategy that is identified by Gross's (1998b) process model. Research has consistently found that within the EMS population, expressive suppression is a common response in the face of a traumatic event (Boyle, 2005). For instance, in a recent qualitative study (Andel, 2017) when asked about the degree to which he/she must engage in expressive suppression on the job, one paramedic stated, "I used to have to do this consciously for those critical calls, but now putting on my game face feels natural and automatic. This job is part acting. If you feel worried and a patient senses that, it may increase their anxiety or distress". Thus, it seems that EMS personnel often feel obligated to keep their emotions "in check" while on the job in order to

successfully attend to the patients and their families. Additional research has also recognized the use of expressive suppression within the EMS occupations (e.g., Blau, Bentley, Eggerichs, Chapman, & Viswanathan, 2014).

Overall, past evidence demonstrates that when EMS professionals are exposed to traumatic events, they experience negative affective reactions. However, these reactions will likely not be congruent with the situational demands of the call, and thus individuals will engage in emotion regulation, such as expressive suppression. Thus, I posit the following:

Hypothesis 2: Within person, traumatic event exposure will be positively related to expressive suppression.

Expressive Suppression in Relation to Strain

Expressive suppression should ultimately relate to psychological strain (i.e., an individuals' psychological reactions to stressors; Hurrell Jr, Nelson, & Simmons, 1998), as it has consistently been found to serve as a maladaptive emotion regulation strategy. This is for two reasons. First, expressive suppression only addresses the *expression* of emotion, and therefore, the negative emotions that are associated with the negative event will still be present (Gross & John, 2003). In fact, research has shown that while expressive suppression decreases *expressions* of negative emotions, evidence suggests that it does not decrease *experiences* of negative emotions (Gross & Levenson, 1993; Webb, Miles, & Sheeran, 2012). Thus, the perpetuation of negative emotions signifies that the traumatic event is still appraised as stressful, which in turn will lead to strain outcomes. Second, expressive suppression is also resource-depleting, as it requires significant cognitive effort. This is because such suppression requires constant self-

monitoring and self-correction in order to ensure that emotions are adequately masked throughout the duration of the emotion process. This is evidenced by research that shows that expressive suppression impairs memory, due to its use of cognitive resources (Richards & Gross, 2000).

Thus, expressive suppression been found to *increase* (rather than decrease) physiological stress responses (Gross, 1998a), and may ultimately even lead to increased risk for cardiovascular diseases (Gross & Levenson, 2003; Webb et al., 2012). Research also shows a link between expressive suppression and sleep disturbance (Hoyt, Thomas, Epstein, & Dirksen, 2009), and meta-analytic evidence has found expressive suppression to be positively related to both anxiety (ϱ = .29) and depression (ϱ = .36; Aldao, Nolen-Hoeksema, & Schweizer, 2010). Research has also explicitly linked expressive suppression to PTS. For instance, Boden et al. (2013) investigated the link between expressive suppression and the severity of PTSD symptoms with military veterans at two time points – before and after residential treatment for PTSD. Results of their study showed that at both time points, expressive suppression was associated with severe PTSD symptoms, whereas another emotion regulation strategy (i.e., cognitive reappraisal) was associated with fewer PTSD symptoms. Additionally, in two samples (i.e., one student sample and one sample of trauma-exposed women), Moore, Zoellner, and Mollenholt (2008) found that expressive suppression was linked to multiple stress-related symptoms, such as anxiety, depression, and severe PTSD symptoms.

Similarly, evidence from emotional labor research has shown that surface acting, which as previously noted may be conceptualized as a broader emotion regulation strategy that includes expressive suppression (Grandey, 2000), is consistently related to

increased strain. For instance, a recent meta-analysis by Hülsheger and Schewe (2011) found surface acting to be significantly related to two facets of burnout (emotional exhaustion ϱ = .44; depersonalization ϱ = .48), psychological strain (ϱ = .42), and psychosomatic complaints (ϱ = .44).

Finally, research specific to the EMS realm has also found expressive suppression to be detrimental. For instance, Wastell (2002) found that expressive suppression predicted stress symptoms in a sample of emergency personnel. Further, recent work by Blau and colleagues (2012) has found that EMT expressive suppression and faking is related to a variety of negative outcomes such as decreased health perceptions and increased burnout. Shepherd and Wild (2014) also found empirical evidence to suggest that expressive suppression is detrimental, as they found a significant link between expressive suppression and PTS symptoms in a sample of emergency medical personnel.

Therefore, past research consistently shows that expressive suppression, while seemingly useful in the moment of the traumatic event, may actually be detrimental for EMS personnel (Gross, 2002). However, it should be noted that all of this research has been conducted at a between-persons level of analysis, and thus was not able to examine the degree to which individuals engaged in expressive suppression following a particular stressful event. Therefore, in the current study, I hypothesize the following:

> ***Hypothesis 3***: Within individuals, expressive suppression will be positively related to (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (e) sleep disturbance.

The Mediating Effects of Expressive Suppression

Further, expressive suppression is expected to explain the relationship between traumatic event exposure and strain outcomes. Specifically, because a traumatic event that is perceived to be stressful should elicit a negative affective response (Smith & Lazarus, 1993), individuals will need to cope with such emotions, possibly through expressive suppression (Gross, 1998a). The use of expressive suppression should expend cognitive resources (Richards & Gross, 2000), thus leading to an increased opportunity for burnout. Further, expressive suppression will minimize emotional *expression,* but will not alleviate the negative emotional *experience* (Gross & Levenson, 1993), and therefore will make one more vulnerable to increased PTS symptoms (e.g., anxiety, depression, sleep disturbance, rumination). Thus, I hypothesize the following:

> ***Hypothesis 4***: Expressive suppression will mediate the relationship between traumatic event exposure and (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (e) burnout.

Moderator of the Traumatic Event and Expressive Suppression Relationship

Additionally, past research has found that certain individual differences may influence the specific emotion regulation strategies that a person chooses to utilize. For instance, Tamir, John, Srivastava, and Gross (2007) investigated the degree to which implicit theories of emotion impact the degree to which individuals engage in two different types of emotion regulation, namely cognitive reappraisal and expressive suppression. Specifically, implicit theories of emotion refer to the degree to which individuals believe that emotions are controllable. That is, if an individual is high on this trait (i.e., emotions are very controllable), then this person is considered to be an

incremental theorist. At the other end of the spectrum, if an individual is low on this trait (i.e., emotions are not at all controllable), then this person is considered to be an *entity theorist*.

Traditionally, implicit theories have been studied in the context of intelligence (e.g., Dweck, 1996; Dweck, 1999). However, research suggests that such implicit theories are domain specific, and thus individuals develop implicit theories about other concepts aside from solely intelligence (Dweck, 1996). Tamir et al. (2007) were the first to extend implicit theories to emotions, and in a weekly diary study of college students, they found a significant relationship between these implicit theories about emotion and cognitive appraisal, such that entity (vs. incremental) theorists tended to engage in less cognitive reappraisal. Recent research by De Castella et al. (2013) built upon this work by finding evidence that such implicit theories about emotion are even more predictive of cognitive reappraisal when individuals are asked about their beliefs regarding *their* own emotions rather than their beliefs regarding *emotions in general*. Interestingly, Tamir et al. (2007) also included expressive suppression in their study, and found that implicit theories about emotion *were not* related to expressive suppression at all (r = .04). They noted that this might be due to the fact that the implicit theories about emotion that they measured were in reference to emotion *experience*, but not to emotion *expression*.

Thus, it may be that implicit theories about emotion *expression* may better predict the tendency to engage in expressive suppression. That is, perhaps the degree to which an individual feels that their *expression* of emotion can be successfully altered will relate to their use of expressive suppression as a form of emotion regulation. I test this postulation

by including a measure of implicit theories about emotion expression. Specifically, I hypothesize the following:

> ***Hypothesis 5:*** Between individual differences in implicit theories about emotion expression will moderate the relationship between negative affective reaction and expressive suppression, such that when this moderating variable is high (i.e., incremental theorist), the relationship will be strengthened.

Moderators between Expressive Suppression and Strain

Further, in addition to the direct relationships proposed between emotional suppression and strain outcomes, this study also proposes that contextual factors will moderate the link between expressive suppression and strain. Specifically, this project focuses on the contextual factors of social support and organizational constraints.

Social support. As aforementioned, expressive suppression is expected to directly link to strain, because this emotion regulation strategy will deplete cognitive resources and the negative emotions from the event will still linger. However, I posit that social support, defined as "the availability of helping relationships and the quality of those relationships" (Leavy, 1983, p. 5), should moderate the relationship between expressive suppression and strain. This is because when social support is high, it should serve as a resource that will assist in assuaging the lingering negative emotions, which should ultimately lead to less strain.

This is in alignment with the Job-Demands Resources (JDR) Model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) which posits that the negative impact of work demands (e.g., emotional demands) on strain outcomes, such as burnout, may be buffered by support from co-workers and supervisors, as it enhances one's ability to manage the

stressors presented by workplace demands. In fact, some past research has found evidence to support the notion that social support buffers the negative effects of various workplace stressors. For instance, Bakker, Demerouti, and Euwema (2005) showed that social support buffered the negative effects of emotional demands, physical demands, and work overload on facets of burnout in a sample of over 1,000 university employees. Xanthopoulou et al. (2007) found similar results in a sample of Dutch home care professionals, and meta-analytic evidence by Viswesvaran, Sanchez, and Fisher (1999) also suggests that social support buffers the impact of stressors on strain outcomes in the workplace.

Research conducted specifically within the EMS domain has also demonstrated the buffering effects of social support. For instance, coworker and supervisor support has been found to weaken the positive relationship between general work stress and depression within EMS (Revicki & Gershon, 1996; Revicki, Whitley, Landis, & Allison, 1988). Research by Mitani, Fujita, Nakata, and Shirakawa (2006) also found that social support decreased emotional exhaustion in a sample of first responders, and work by Lowery and Stokes (2005) provided further evidence that peer support was negatively related to PTS symptoms within a sample of student paramedics. This is also exemplified in qualitative research, such as that of Regehr and Millar (2007), in which a paramedic noted, "…your partner becomes a secondary relationship in your life, and if you have a good partner, that is a tremendous support for you, and you usually support each other because you both did the call…" (p. 54).

Additionally, a very recent daily diary study also demonstrated the buffering effect of social support on the relationship between organizational stressors and strain in

a sample of Canadian paramedics. Specifically, Pow, King, Stephenson, and DeLongis (2016) found that social support moderated the relationship between occupational stressors and sleep quality, such that individuals who perceived more social support experienced better sleep in comparison to those who perceived low levels of social support. This effect was found both when occupational stress was measured daily, and when daily occupational stress was averaged over the number of days in the study.

Therefore, in the current study, I posit that although the sole use of expressive suppression is not expected to successfully combat negative strain outcomes, high levels of social support should weaken the direct relationship between expressive suppression and strain. Specifically, I hypothesize the following:

> ***Hypothesis 6***: Between individual differences in social support will moderate the relationships between expressive suppression and strain, such that when this moderating variable is high, the relationship between expressive suppression and (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (e) burnout will be weaker.

Organizational constraints. On the other hand, organizational constraints, defined as "situations or things that prevent employees from translating ability and effort into high levels of job performance" (Spector & Jex, 1998, p. 357), should serve as an additional stressor, or demand, that exacerbates the relationship between expressive suppression and strain. Specifically, as aforementioned, expressive suppression should directly relate to strain. This relationship should get even stronger when organizational constraints are high. This is because this additional stressor should deplete further resources and hamper one's ability to adequately cope with higher stress levels. This in

turn should enhance the negative relationship between expressive suppression and strain outcomes.

Perhaps unsurprisingly, past research has indeed found organizational constraints to be a stressor that is linked to a variety of negative strain outcomes. For instance, a recent meta-analysis by Pindek and Spector (2016) found organizational constraints to relate to negative outcomes such as physical symptoms, negative emotions, anxiety, emotional exhaustion (a facet of burnout), and general stress. Further, this meta-analysis found that organizational constraints contribute to strain outcomes above and beyond other stressors, suggesting that it can contribute to a cumulative effect.

Further evidence of the cumulative effects of job demands on strain has been supported in past research within the EMS realm. For instance, research by Donnelly (2011) found an interactive effect between critical incident stress (i.e., exposure to traumatic events) and chronic organizational stress (including various organizational constraints) in predicting PTS symptoms within a sample of EMS personnel. Thus, it appears that the combination of these different stressors enhance the negative effect on strain outcomes. Ultimately, this past research suggests that the relationship between expressive suppression, which will serve as a failed attempt at addressing the stressor (i.e., traumatic exposure), and strain outcomes will be moderated by organizational constraints. Specifically, I hypothesize the following:

> ***Hypothesis 7*:** Between individual differences in organizational constraints will moderate the relationships between expressive suppression and strain, such that when this moderating variable is high, the relationship between expressive

suppression and (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (f) burnout will be stronger.

Current Study

Ultimately, the purpose of this study is to investigate a mechanism by which traumatic event exposures lead to burnout and PTS symptoms in a sample of emergency medical professionals Specifically, I examine the role of expressive suppression in this relationship between traumatic event exposure and strain. Further, this study examines three moderating factors in this process.

To test the aforementioned hypotheses, I utilized a 10-wave weekly diary study design. Specifically, 200 current emergency medical professionals were recruited from the database of the National Registry of Emergency Medical Technicians (NREMT). These individuals completed a baseline survey (Time 0) and 10 subsequent weekly diary studies (Time 1-10). The Time 0 survey trait-level variables, such as implicit theories about emotion expression, perceived social support, organizational constraints, and demographics. The weekly diary surveys measured traumatic event exposures, expressive suppression, burnout, and PTS symptoms. Participants received an e-gift card worth up to $60 in exchange for their participation in this study.

This study builds upon the existing emergency medical literature by utilizing a within-person diary design, which moves beyond the research that only examines emotion regulation as a trait-level *style* as opposed to a technique that may vary across time. Further, this study also builds upon the literature that examines emotion regulation in the workplace (i.e., emotional labor) by extending beyond the broad construct of surface acting, and also by examining an occupation that is outside of the customer

service arena. Additionally, this study investigates various factors that may be feasibly addressed through organization-level intervention efforts, such as emotion regulation strategies, social support, and organizational constraints. Ultimately, this research serves an important role by enhancing our knowledge about how to best enhance wellbeing outcomes for emergency medical personnel when exposed to traumatic events on the job.

Table 1.
Study Hypotheses and Proposed Analyses

#	Hypothesis	Analysis	Effect Type
1	Within person, traumatic event exposure (L_1) will be positively related to (a) anxiety (L_1), (b) depression (L_1), (c) sleep disturbance (L_1), (d) rumination (L_1), and (e) burnout (L_1)	MSEM	Additive
2	Within person, traumatic event exposure (L_1) will be positively related to expressive suppression (L_1).	MSEM	Additive
3	Within individuals, expressive suppression (L_1) will be positively related to (a) anxiety (L_1), (b) depression (L_1), (c) sleep disturbance (L_1), (d) rumination (L_1), and (e) burnout (L_1)	MSEM	Additive
4	Expressive suppression (L_1) will mediate the relationship between traumatic event exposure (L_1) and (a) anxiety (L_1), (b) depression (L_1), (c) sleep disturbance (L_1), (d) rumination (L_1), and (e) burnout (L_1)	MSEM	Mediating
5	Between individual differences in implicit theories about emotion expression (L_2) will moderate the relationship between traumatic event exposure and expressive suppression, such that when this moderating variable is high (i.e., incremental theorist), the relationship will be stronger.	MSEM	Moderator
6	Between individual differences in social support (L_2) will moderate the relationships between expressive suppression and strain, such that when this moderating variable is high, the relationship between expressive suppression (L_1) and (a) anxiety (L_1), (b) depression (L_1), (c) sleep disturbance (L_1), (d) rumination (L_1), and (e) burnout (L_1) will be weaker.	MSEM	Moderator
7	Between individual differences in organizational constraints (L_2) will moderate the relationships between expressive suppression and strain, such that when this moderating variable is high, the relationship between expressive suppression (L_1) and (a) anxiety (L_1), (b) depression (L_1), (c) sleep disturbance (L_1), (d) rumination (L_1), and (e) burnout (L_1) will be stronger.	MSEM	Moderator

Notes. L_1 = Level 1; L_2 = Level 2.

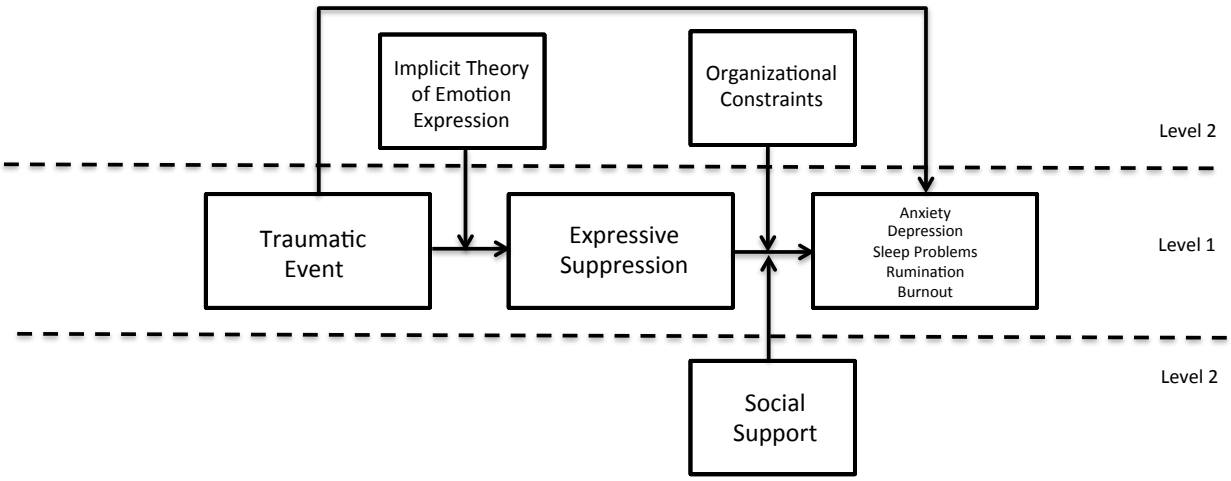

Figure 1. Visual representation of proposed relationships.

Chapter 2:

Method

Data for the current study were collected using a weekly diary methodology. Participants completed a baseline survey, followed by a weekly survey each week for 10 weeks. Additional study procedures are described in further detail below.

Participants

Participants in the current study were 200 Paramedics recruited from the National Registry of Emergency Medical Technicians (NREMT) national database. This sample size was determined as the appropriate recruitment number after conducting a power analysis that was based upon previous research by Pow et al. (2016) who examined the effect of occupational stress in relation to self-reported sleep quality in a sample of paramedics. Specifically, an intraclass correlation [i.e., ICC(1)] of $\varrho = .18$ with a between-person variance (τ_{00}) of 0.10, and a within-person variance (σ^2) of 0.46 was entered into an HLM power analysis calculator in order to see how many people would be needed to find an effect size of $\delta = .25$. Results demonstrated that an N of approximately 130 individuals (with 10 observations per person) would be needed to obtain statistical power at the recommended .80 level. In order to account for attrition, 200 participants were recruited.

In terms of inclusion criteria, all participants must (1) be currently working full time as a Paramedic, (2) primarily provide direct patient care, (3) go on at least 10 calls per week, (5) work at least 30 hours per week, and (6) be able and willing to fill out

weekly internet-based surveys on their computer or phone. Of the final sample of 200 participants, the majority (i.e., 163) completed all ten weekly surveys. Further, 19 participants completed nine waves, 5 completed eight waves, 2 completed 7 waves, 4 completed five waves, 4 completed four waves, 2 completed three waves, and 1 completed two waves. The final sample was predominantly male (74.0%) and Caucasian (91.0%) with a mean age of 36.38 (Range: 21-68). A total of 46.5% of participants worked for one EMS organization, and the rest of the sample worked for two or more EMS organizations. Fifty-five percent of the sample worked at their current EMS job for at least 4 years, and 51% of the sample worked within the EMS field for at least 10 years. Throughout data collection, the average shift length was 23.49 hours (Range: 8-72 hours). One-third (34%) of the sample worked an average of over 60 hours per week. In terms of education, 1.5% held a high school degree, 38.0% had some college, 33.5% had a 2-year degree, 17.5% had a 4 year degree, 3.5% had a professional degree, and 6.0% had a master's degree. Most participants (88.0%) worked in a community that serves at least 25,000 people. Forty-six of the 50 United States were represented in the sample, with the most represented state being Texas (14 participants).

Procedure

Recruitment. The sample for the current study was recruited from the National Registry of Emergency Medical Technicians (NREMT) email database. This database consists of contact information of all emergency medical personnel who have been nationally certified by the NREMT. The Research Fellow at the NREMT sent my initial recruitment email, which included a link to a screener survey (See Appendix B), out to a

random sample of 10,062 current EMS professionals across the United States[1]. From this recruitment effort, 487 individuals responded, with 347 individuals meeting the necessary eligibility criteria. From this list of eligible individuals, 200 people were randomly selected to receive a link for the training video and the initial baseline survey, which was open for one week (discussed below). Of this list of 200, 193 individuals completed the baseline survey within one week. One week later, 7 more individuals were invited to participate in the study, and these individuals completed the baseline survey within one week. All other eligible individuals were sent an email that thanked them for their interest and that told them they would be placed on a waiting list in case any spots in the study opened up.

Consent, data collection, and compensation. The study proceeded in two phases. The first phase consisted of a training video that was sent via email (link to video: https://youtu.be/JVmDuVH0Mgc). This training video described the data collection procedures in detail. Specifically, this video told participants how to use the online survey website, and gave detailed instructions on taking the online survey each week. Also during this phase, participants completed a preliminary survey, which included the informed consent document (listed as the first page on the survey) and measures of demographic information and other person-level variables, namely implicit theories about emotion, social support, and organizational support. For each participant, a randomly generated survey code was included in the survey link. This survey code was included in results reports by Qualtrics, and therefore allowed participant surveys to be linked across

[1] It should be noted that it is impossible to know how many emails were checked. Further, it is unknown how many emails bounced back. Therefore, an overall response rate could not be accurately calculated.

the weeks without the use of identifying information. Weekly surveys were sent to participants via email each week for the following 10 weeks.

The online survey host (i.e., Qualtrics) recorded the date and time that participants took each weekly survey in order to ensure compliance with study procedures. Participants were told that they must complete each weekly survey within 48 hours in order to receive compensation for that week. Reminders were sent through the Qualtrics platform after 24 hours and again after 46 hours (i.e., 2 hours before the weekly deadline). Participants were provided an additional 24-hour grace period after the weekly deadline to complete each weekly survey. Weekly survey links automatically deactivated after 3 days of being sent (i.e., 72 hours).

As noted above, written informed consent was not obtained, but a waiver of documentation of consent was used. Participants viewed the informed consent document online as the first page of the baseline survey. It included a statement that the study involves research, an explanation of the purposes of the research, the expected duration of participation, a description of the procedures, a description of potential risks and benefits, a statement regarding confidentiality, the researchers' contact information, and a statement that the study was voluntary and withdrawal was permitted at any time. Upon completion of the study, participants were given contact information of the primary investigator for the results of the study.

As compensation, participants received an Amazon e-gift card worth up to $60. Specifically, I gave participants $5 for each weekly diary survey that they complete. A completion bonus of $10 was added to the e-gift card if participants completed all 10 of

the weekly surveys. Thus, participants were given an e-gift card for $5 X the number of completed weekly diary surveys (+ $10 if they completed all the weekly surveys).

This research was supported in part by the Sunshine Education and Research Center at the University of South Florida. The Center is supported by Training Grant No. T42-OH008438 from the Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH).

Measures

Baseline Survey (Time 0)

Social Support. Supervisor and coworker support was measured separately using the Support Appraisal for Work Stressors inventory (SAWS; Lawrence, Gardner, & Callan, 2007). Participants were asked three items pertaining to the amount of emotional support they receive from their supervisors and coworkers. A sample is, "How much can you rely on your (supervisor/coworkers) to help you feel better when you experience work-related problems?". These items were rated on a 5-point scale (1 = *Not at all*; 5 = *A great deal*).

Organizational Constraints. Organizational constraints were measured with Spector and Jex's (1998) 11-item organizational constraints scale. An example item is, "How often do you find it difficult or impossible to do your job because of poor equipment or supplies?" These items were rated on a scale of 1 (*never*) to 5 (*very often*).

Implicit Theories about Emotion Expression. Implicit theories about emotion expression were measured with four adapted measures from the Implicit Theories of Intelligence Scale (Dweck, 1999). Sample items are, "I can learn to control my emotional expressions", and "If I want to, I can change the emotional expressions that I

have". These items were rated on a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*).

Demographics. Demographic information was collected at baseline, and included measures of gender, ethnicity, age in years, job tenure in months, level of EMS certification, hours worked per week, education level, average shift length, and state where certified.

Weekly Diary Survey (Time 1-10)

Traumatic Event Exposure. To measure traumatic event exposure over the past week, participants were asked whether or not they experienced or witnessed "a troubling or potentially traumatic event while on a call with a patient over the past 7 days (e.g., witnessed the death of a child, got injured while on a call, encountered an elderly person who was severely neglected). If so, they were asked to select the option "Yes, I did experience a troubling event at work this week". They were then asked to briefly describe the event. If they did *not* witness or experience such an event, they were asked to select the option, "No, I did not experience a troubling event at work this week". Participants were given the opportunity to list (and describe) up to three traumatic events each week. However, it should be noted that in the current study, only the first troubling event was included in the analyses.

Expressive Suppression. Expressive suppression was measured with three adapted items from the suppression subscale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). A sample item from this scale is, "While on a call with patients, when I was feeling negative emotions, I made sure not to express them". These

items referred to the past 7 days, and were rated on a scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Burnout. Burnout was measured with 6 adapted items from the Copenhagen Burnout Inventory (CBI; Kristensen, Borritz, Villadsen, & Christensen, 2005). Sample items from this scale are, "Over the past 7 days, I have found it hard to work with patients and/or their family members" and "Over the past 7 days, it has drained my energy to work with patients and/or their family members." Each item referred to the past 7 days, and participants rated the degree to which they agreed with each item on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Anxiety. Anxiety was measured with a shortened 3-item version of the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1992), which was originally shortened by Cranford et al. (2006). Specifically, participants were asked to rate the degree to which they felt or experienced the following emotions over the past 7 days: "anxious", "uneasy", and "on edge" (1 = *Not at all*; 5 = *A great deal*).

Depression. Depression was measured with the a shortened 4-item version of the POMS (Cranford et al., 2006; McNair et al., 1992). Specifically, participants were asked to rate the degree to which they felt or experienced the following emotions over the past 7 days: "sad", "hopeless", "discouraged", and "blue" (1 = *Not at all*; 5 = *A great deal*).

Sleep Disturbance. Participants rated their weekly sleep quality with one item from the Pittsburgh Sleep Quality Inventory (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Specifically, participants were asked to respond to the following question: "Over the past 7 days, how would you rate your sleep quality overall?" (1 = *Very bad*; 4 = *Very good*). This measure was reverse coded in order to represent sleep disturbance.

Rumination. Rumination was measured with an adapted version of the Negative and Positive Work Rumination Scale (NAPWRS; Frone, 2015). Only items pertaining to negative rumination were used in this study, and participants were asked to report the frequency with which they engaged in various rumination behaviors over the past 7 days (1 = *Never*; 5 = *Always*). A sample item from this scale is, "Over the past 7 days, how often have you replayed negative work events in your mind even after you left work?".

Analytic Approach

As this study hypothesizes within-subjects effects, multilevel structural equation modeling (MSEM) was implemented with Mplus version 7.4 (Muthén & Muthén, 1998-2012). This method accounts for the nested structure of this dataset, and also accounts for missing data. Further, unlike hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992), MSEM decomposes predictor variables into two uncorrelated latent variable parts (i.e., a within part and a between part). Such decomposition allows for the ability to examine relationships separately at each the within and between levels. This is noteworthy, as the magnitude and directionality of effects (including indirect mediation effects) may vary across levels (Preacher, Zyphur, & Zhang, 2010).

The decomposition that occurs with MSEM "can be viewed as an implicit, latent group-mean centering of the latent within-level covariate" (Muthén & Muthén, 1998-2012, p. 263), and therefore no explicit centering is required. However, researchers may still choose to center their predictors in order to enhance interpretation (Preacher et al., 2010). Therefore, in the current study, predictors were grand-mean centered in order to ensure that the intercepts were interpretable when plotting cross-level interaction effects (Ryu, 2015). Specifically, expressive suppression (level 1) and all tested moderators (i.e.,

implicit theories of expressive suppression, coworker support, supervisor support, and organizational constraints) were all grand-mean centered. Traumatic event exposure was not grand-mean centered, as zero is a meaningful value for that measure. See Figure 2 for a depiction of this decomposition of within and between level variance.

Since all participants completed at least 2 weekly diary time points, no individuals were excluded from the study analyses. This is in alignment with recommendations by Nezlek (2012), who notes that multilevel modeling can be conducted with participants who have at least 2 data points.

To test hypotheses 1 through 4, mediation models were specified in which traumatic events lead to expressive suppression and expressive suppression lead to the outcome of interest. Further, a direct path was specified between traumatic event exposure and the outcome. This type of model is commonly referred to as a "1-1-1 multilevel mediation model", as the predictor, mediator, and outcome variables are all assessed at Level 1 (Preacher et al., 2010). All intercepts and slopes were allowed to randomly vary. Each outcome was tested separately, resulting in five mediation models. These five models served as the base models for the rest of the hypotheses. The model in Figure 2 depicts an example of this 1-1-1 mediation model.

To test hypothesis 5, a cross-level interaction estimate between implicit theories of expressive suppression (level 2) and traumatic event exposure (level 1) was added to each base model. This allowed for the examination of the moderating effect of implicit theories of expressive suppression on the relationship between traumatic event exposure and expressive suppression.

To test hypothesis 6, a cross-level interaction estimate between expressive suppression (level 1) and social support (level 2) was added to each base model. This allowed for the examination of the moderating effect of social support on the relationship between expressive suppression and each strain outcome.

Finally, to test hypothesis 7, a cross-level interaction estimate between expressive suppression (level 1) and organizational constraints (level 2) was added to each base model. This allowed for the examination of the moderating effect of organizational constraints on the relationship between expressive suppression and each strain outcome. See Table 1 for a summary of the study hypotheses and models that were tested.

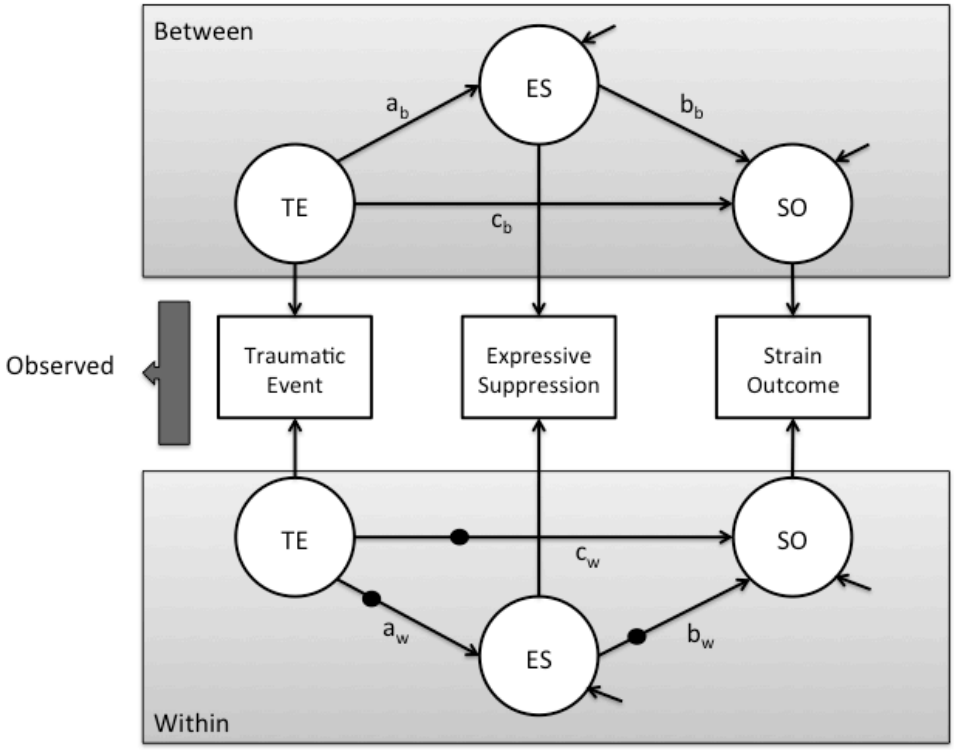

Figure 2. Multilevel structural equation model showing a 1-1-1 multilevel mediation model between traumatic event exposure (TE), expressive suppression (ES), and a strain outcome variable (SO). A black dot indicates that the slope of the estimated path was allowed to randomly vary. This model depicts a base mediation model that was used to test hypotheses 1 through 4.

Chapter 3:

Results

Tables 2 and 3 provide descriptive statistics and correlations for all study variables. The intraclass correlation [ICC(1)] value calculates the proportion of the total variance in a variable that is accounted for by clustering (i.e., the proportion of variance that is between-level). The ICC(1) values for outcomes in this study ranged from .46 to .70, indicating that there was substantial between-person variability in all outcome variables. Upon initial examination of the study correlations, it is evident that study variables are related in the expected directions. For instance, within-person correlations between expressive suppression and each outcome demonstrate a positive correlation. A similar pattern is displayed for the within-person correlations between traumatic event exposure and all strain outcomes. It is also noteworthy, however, that the magnitude of the within-person correlation between traumatic event exposure and expressive suppression was quite small ($r = .07, p < .01$), indicating that traumatic event exposure may not be strongly linked to greater use of expressive suppression.

Hypothesis 1 suggested that traumatic event exposure would be positively related to anxiety, depression, sleep disturbance, rumination, and burnout. Results indicate that the direct path between traumatic event exposure and each outcome of interest was significant. Specifically, traumatic event exposure was positively related to anxiety (B = .24, S.E. = .04, $p < .01$), depression (B = .28, S.E. = .04, $p < .01$), sleep disturbance (B = .21, S.E. = .04, $p < .01$), rumination (B = .32, S.E. = .04, $p < .01$), and burnout (B = .16,

S.E. = .04, $p < .01$). Thus, hypothesis 1 was fully supported. See Tables 4 through 8 for detailed results of these analyses.

Hypothesis 2 proposed that traumatic event exposure would be positively related to expressive suppression within person. Specifically, although trending in the hypothesized direction, this relationship was not significant across any of the tested models (e.g., B = 0.07, S.E. = .04). Thus, hypothesis 2 was not supported. See Tables 4 through 8 for each of these estimates.

Hypothesis 3 proposed that expressive suppression would be positively related to anxiety, depression, rumination, sleep disturbance, and burnout. Results indicate that the relationship between expressive suppression and each outcome of interest was significant and in the expected direction. Specifically, this relationship was significant for anxiety (B = .12, S.E. = .03, $p < .01$), depression (B = .08, S.E. = .02, $p < .05$), sleep disturbance (B = .12, S.E. = .03, $p < .01$), rumination (B = .16, S.E. = .04, $p < .01$), and burnout (B = .17, S.E. = .04, $p < .01$). See Tables 4 through 8 for specific estimates and detailed results. Therefore, hypothesis 3 was supported.

Hypothesis 4 proposed that expressive suppression would mediate the relationships between traumatic event exposure and (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (e) burnout. Indirect effects with bootstrapped confidence intervals were calculated for each relationship. Results of this analysis demonstrated that indirect effects were significant for sleep disturbance, rumination, and burnout. Indirect effects were not significant for anxiety or depression. See Tables 4 through 8 for each indirect effect and corresponding 95% bootstrapped confidence intervals. Overall, hypothesis 4 was partially supported.

Hypothesis 5 proposed that implicit theory of emotion expression would moderate the relationship between traumatic event exposure and expressive suppression. Results of this analysis demonstrated that this moderating effect was not significant across any of the models. See Tables 9 through 13 for specific estimates and detailed results. Overall, hypothesis 5 was not supported.

Hypothesis 6 proposed that social support would moderate the relationship between expressive suppression and (a) anxiety, (b) depression, (c) sleep disturbance, (d) rumination, and (e) burnout. This hypothesis was examined with both coworker support and supervisor support. Regarding supervisor support, the moderating effect of supervisor support was marginally significant for the relationship between expressive suppression and anxiety. As expected, when supervisor support was high, the positive relationship between expressive suppression and anxiety was weaker. See Tables 14 through 18 for specific estimates and detailed results. Regarding coworker support, results showed that coworker support significantly moderated the relationship between expressive suppression and burnout. As expected, when coworker support was high, the positive relationship between expressive suppression and burnout was weaker, and when coworker support was low, the positive relationship between expressive suppression and burnout was stronger. A similar patterns was found for anxiety, but this moderating effect was only marginally significant. See Tables 19 through 23 for specific estimates and detailed results. Overall, hypothesis 6 received mixed support. See Figures 3 through 5 for plots of the significant and marginally significant social support interactions.

Hypothesis 7 proposed that organizational constraints would moderate the relationship between expressive suppression and (a) anxiety, (b) depression, (c) sleep

disturbance, (d) rumination, and (e) burnout. Results showed that organizational constraints significantly moderated the relationship of expressive suppression with anxiety and burnout. Specifically, when organizational constraints were high, the positive relationship between expressive suppression and anxiety/burnout was stronger, and when organizational constraints were low, the positive relationship between expressive suppression and anxiety/burnout was weaker. A similar pattern was found for all other tested outcomes (with the exception of sleep quality), but these moderating effects were only marginally significant. Estimates for these moderating effects can be found in Tables 24 through 28. See Figure 6 through 9 for plots of these interactions.

Table 2.
Descriptive Statistics for Study Variables

Variables	Mean (SD)	Min	Max	Reliability*	ICC(1)
Baseline					
Implicit Theories of ES	2.82 (0.78)	1.50	5.00	0.89	-
Coworker Support	3.29 (1.08)	1.00	5.00	0.95	-
Supervisor Support	2.71 (1.30)	1.00	5.00	0.95	-
Organizational Constraints	1.99 (0.55)	1.00	3.91	0.85	-
Weekly Diaries					
Anxiety	2.07 (0.82)	1.00	4.53	0.89	0.69
Depression	1.79 (0.69)	1.03	4.03	0.85	0.65
Rumination	2.38 (0.72)	1.05	4.08	0.94	0.56
Sleep Disturbance	2.43 (0.56)	1.30	4.00	-	0.46
Burnout	2.46 (0.96)	1.00	4.93	0.93	0.70
Expressive Suppression	3.29 (0.69)	1.23	4.95	0.85	0.59
Traumatic Event Exposure	0.26 (0.22)	0.00	1.00	-	0.17

Notes. Level-1 records range from 1892 to 1894; ICC(1) = Intraclass correlation coefficient; ES = expressive suppression;*For the weekly diary measures, reliability was calculated individually for each week, and then the average of the respective ten reliabilities was taken.

Table 3.
Intercorrelations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Implicit Theories	-	-	-	-	-	-	-	-	-	-	-
2. Supervisor Support	.11	-	-	-	-	-	-	-	-	-	-
3. Coworker Support	.09	.43**	-	-	-	-	-	-	-	-	-
4. Organizational Constraints	.06	-.38**	-.26**	-	-	-	-	-	-	-	-
5. Anxiety	-.09	-.19**	-.09	.34**	-	.77**	.64**	.41**	.53**	.26**	.20**
6. Depression	-.10	-.24**	-.09	.35**	.83**	-	.65**	.41**	.53**	.21**	.24**
7. Rumination	-.03	-.20**	-.12^	.37**	.75**	.77**	-	.41**	.55**	.27**	.33**
8. Sleep Disturbance	.04	-.14*	-.14^	.29**	.49**	.53**	.49**	-	.34**	.19**	.20**
9. Burnout	-.11	-.32**	-.26**	.40**	.61**	.62**	.67**	.42**	-	.21**	.15**
10. Expressive Suppression	.14*	-.05	-.03	.16*	.32**	.26**	.32**	.22**	.23**	-	.07**
11. Traumatic Event Exposure	.09	-.08	-.10	.16*	.25**	.26**	.35**	.22**	.21**	.12^	-

Notes. N = 1899 weekly diaries from N = 200 participants (Baseline); $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$; Values below the diagonal represent the correlations for between-person variables (1-4) and between person-level means for daily variables (5-11) while values above the diagonal represent correlations between variables at the weekly level.

Table 4.
Traumatic Event Exposure Predicting Anxiety through Expressive Suppression

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.768**	0.105		
Path a_b	0.430	0.334		
Path b_b	0.264**	0.092		
Path c_b	0.904*	0.377		
Indirect effect	0.190	0.121		
Residual variance anxiety	0.479**	0.052		
Residual variance suppression	0.455**	0.046		
Within level				
Path a_w	0.068^	0.040	0.076*	0.031
Path b_w	0.118**	0.031	0.038*	0.015
Path c_w	0.236**	0.042	0.127**	0.045
Indirect effect	0.024	0.015		
Residual variance anxiety	0.241**	0.019		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. 95% CI for between indirect effect is [-.047, .428]; 95% CI for within indirect effect is [-.006, .054]. $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 5.
Traumatic Event Exposure Predicting Depression through Expressive Suppression

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.518**	0.095		
Path a_b	0.440	0.333		
Path b_b	0.152*	0.074		
Path c_b	0.800*	0.324		
Indirect effect	0.121	0.079		
Residual variance depression	0.336**	0.048		
Residual variance suppression	0.455**	0.046		
Within level				
Path a_w	0.068^	0.040	0.076*	0.030
Path b_w	0.086*	0.027	0.028*	0.012
Path c_w	0.281**	0.044	0.172**	0.052
Indirect effect	0.019	0.014		
Residual variance depression	0.189**	0.017		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> depression; Path c_b/c_w = traumatic event -> depression. 95% CI for between indirect effect is [-.034, .275]; 95% CI for within indirect effect is [-.009, .047]. $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 6.
Traumatic Event Exposure Predicting Sleep through Expressive Suppression

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.624**	0.080		
Path a_b	0.472	0.311		
Path b_b	0.058	0.069		
Path c_b	0.473^	0.272		
Indirect effect	0.097	0.059		
Residual variance sleep	0.241**	0.031		
Residual variance suppression	0.452**	0.046		
Within level				
Path a_w	0.064	0.040	0.077*	0.031
Path b_w	0.122**	0.030	0.017	0.011
Path c_w	0.214**	0.038	0.066*	0.031
Indirect effect	0.035**	0.013		
Residual variance sleep	0.285**	0.018		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> sleep; Path c_b/c_w = traumatic event -> sleep. 95% CI for between indirect effect is [-.019, .212]; 95% CI for within indirect effect is [.010, .061]. $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 7.
Traumatic Event Exposure Predicting Rumination through Expressive Suppression

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.016**	0.100		
Path a_b	0.410	0.319		
Path b_b	0.163*	0.076		
Path c_b	0.996*	0.384		
Indirect effect	0.155	0.100		
Residual variance rumination	0.318**	0.038		
Residual variance suppression	0.457**	0.047		
Within level				
Path a_w	0.075^	0.041	0.077*	0.031
Path b_w	0.157**	0.035	0.037*	0.018
Path c_w	0.475**	0.044	0.126**	0.041
Indirect effect	0.043**	0.015		
Residual variance rumination	0.286**	0.016		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> rumination; Path c_b/c_w = traumatic event -> rumination. 95% CI for between indirect effect is [-.042, .352]; 95% CI for within indirect effect is [.014, .073]. $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 8.
Traumatic Event Exposure Predicting Burnout through Expressive Suppression

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	0.757**	0.069		
Path a_b	0.457	0.321		
Path b_b	0.163	0.105		
Path c_b	0.985*	0.480		
Indirect effect	0.174	0.110		
Residual variance burnout	0.757**	0.069		
Residual variance suppression	0.455**	0.046		
Within level				
Path a_w	0.066^	0.039	0.076*	0.031
Path b_w	0.170**	0.041	0.075**	0.021
Path c_w	0.163**	0.043	0.064*	0.029
Indirect effect	0.038*	0.018		
Residual variance burnout	0.325**	0.022		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> burnout; Path c_b/c_w = traumatic event -> burnout. 95% CI for between indirect effect is [-.042, .389]; 95% CI for within indirect effect is [.002, .074]. $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 9.
Traumatic Event Exposure Predicting Expressive Suppression and Anxiety with Implicit Theories as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.763**	0.105		
Path a_b	0.394	0.336		
Path b_b	0.263**	0.093		
Path c_b	0.923*	0.375		
Implicit Theories on ES	0.102	0.073		
Interaction on ES	0.038	0.053		
Residual variance anxiety	0.481**	0.052		
Residual variance suppression	0.447**	0.045		
Within level				
Path a_w	0.065	0.040		
Path b_w	0.118**	0.031	0.040*	0.016
Path c_w	0.235**	0.042	0.126**	0.045
Residual variance anxiety	0.241**	0.019		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety; Interaction = traumatic event exposure x implicit theories -> expressive suppression. Residual random variance of path a_w = .071* (S.E. = .032). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 10.
Traumatic Event Exposure Predicting Expressive Suppression and Depression with Implicit Theories as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.516**	0.095		
Path a_b	0.399	0.340		
Path b_b	0.149*	0.074		
Path c_b	0.805*	0.324		
Implicit theories on ES	0.103	0.072		
Interaction on ES	0.041	0.054		
Residual variance depression	0.336**	0.048		
Residual variance suppression	0.448**	0.045		
Within level				
Path a_w	0.066^	0.040		
Path b_w	0.086**	0.027	0.028*	0.013
Path c_w	0.281**	0.044	0.172**	0.052
Residual variance depression	0.189**	0.017		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. Residual random variance of path a_w = .071* (S.E. = .032). **$p < .01$, *$p < .05$, ^$p < .10$

Table 11.
Traumatic Event Exposure Predicting Expressive Suppression and Sleep with Implicit Theories as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.378**	0.080		
Path a_b	0.426	0.316		
Path b_b	0.058	0.068		
Path c_b	0.466^	0.271		
Implicit Theories on ES	0.107	0.072		
Interaction on ES	0.034	0.050		
Residual variance sleep	0.241**	0.031		
Residual variance suppression	0.447**	0.045		
Within level				
Path a_w	0.064	0.040		
Path b_w	0.122**	0.030	0.018^	0.010
Path c_w	0.212**	0.038	0.067*	0.031
Residual variance sleep	0.284**	0.018		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. Residual random variance of path a_w = .075* (S.E. = .032). **$p < .01$, *$p < .05$, ^$p < .10$

Table 12.
Traumatic Event Exposure Predicting Expressive Suppression and Rumination with Implicit Theories as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.014**	0.101		
Path a_b	0.373	0.326		
Path b_b	0.162*	0.076		
Path c_b	1.001*	0.387		
Implicit Theories on ES	0.104	0.073		
Interaction on ES	0.031	0.052		
Residual variance rumination	0.318**	0.038		
Residual variance suppression	0.451**	0.045		
Within level				
Path a_w	0.074^	0.041		
Path b_w	0.157**	0.035	0.037*	0.018
Path c_w	0.474**	0.044	0.125**	0.040
Residual variance rumination	0.286**	0.016		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. Residual random variance of path a_w = .075* (S.E. = .031). **$p < .01$, *$p < .05$, ^$p < .10$

Table 13.
Traumatic Event Exposure Predicting Expressive Suppression and Burnout with Implicit Theories as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.170**	0.135		
Path a_b	0.418	0.326		
Path b_b	0.159	0.105		
Path c_b	1.000*	0.480		
Implicit Theories on ES	0.105	0.072		
Interaction on ES	0.033	0.050		
Residual variance burnout	0.758**	0.070		
Residual variance suppression	0.449**	0.045		
Within level				
Path a_w	0.065^	0.039		
Path b_w	0.170**	0.041	0.075**	0.020
Path c_w	0.162**	0.043	0.064*	0.029
Residual variance burnout	0.326**	0.022		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> burnout; Path c_b/c_w = traumatic event -> burnout. Residual random variance of path a_w = .074* (S.E. = .031). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 14.
Traumatic Event Exposure Predicting Expressive Suppression and Anxiety with Supervisor Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.784**	0.107		
Path a_b	0.409	0.330		
Path b_b	0.261**	0.092		
Path c_b	0.845*	0.381		
Supervisor support on anxiety	-0.109**	0.041		
Interaction on anxiety	-0.038^	0.022		
Residual variance anxiety	0.462**	0.052		
Residual variance suppression	0.452**	0.046		
Within level				
Path a_w	0.067^	0.040	0.074*	0.031
Path b_w	0.120**	0.031		
Path c_w	0.237**	0.042	0.127**	0.045
Residual variance anxiety	0.241**	0.019		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. Residual random variance of path b_w = .037* (S.E. .015). **$p < .01$, *$p < .05$, ^$p < .10$

Table 15.
Traumatic Event Exposure Predicting Expressive Suppression and Depression with Supervisor Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.536**	0.094		
Path a_b	0.424	0.330		
Path b_b	0.150*	0.074		
Path c_b	0.741*	0.323		
Supervisor support on depression	-0.123**	0.032		
Interaction on depression	-0.022	0.017		
Residual variance depression	0.312**	0.045		
Residual variance suppression	0.453**	0.046		
Within level				
Path a_w	0.066^	0.040	0.074*	0.030
Path b_w	0.085**	0.027		
Path c_w	0.281**	0.044	0.172**	0.052
Residual variance depression	0.189**	0.017		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> depression; Path c_b/c_w = traumatic event -> depression. Residual random variance of path b_w = .027* (S.E. .012). **p < .01, *p < .05, ^p < .10

Table 16.
Traumatic Event Exposure Predicting Expressive Suppression and Sleep with Supervisor Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.392**	0.080		
Path a_b	0.446	0.310		
Path b_b	0.055	0.069		
Path c_b	0.413	0.270		
Supervisor support on sleep	-0.038	0.033		
Interaction on sleep	-0.019	0.021		
Residual variance sleep	0.239**	0.031		
Residual variance suppression	0.453**	0.046		
Within level				
Path a_w	0.065	0.040	0.076*	0.030
Path b_w	0.123**	0.030		
Path c_w	0.215**	0.039	0.067*	0.031
Residual variance sleep	0.284**	0.018		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> sleep; Path c_b/c_w = traumatic event -> sleep. Residual random variance of path b_w = .018^ (S.E. .010). $^{**}p < .01$, $^{*}p < .05$, ^$p < .10$

Table 17.
Traumatic Event Exposure Predicting Expressive Suppression and Rumination with Supervisor Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.030**	0.099		
Path a_b	0.380	0.317		
Path b_b	0.164*	0.076		
Path c_b	0.958*	0.381		
Supervisor support on rumination	-0.108**	0.034		
Interaction on rumination	-0.018	0.023		
Residual variance rumination	0.297**	0.036		
Residual variance suppression	0.457**	0.047		
Within level				
Path a_w	0.075^	0.041	0.077*	0.030
Path b_w	0.155**	0.035		
Path c_w	0.475**	0.044	0.127**	0.041
Residual variance rumination	0.286**	0.016		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> rumination; Path c_b/c_w = traumatic event -> rumination. Residual random variance of path b_w = .037* (S.E. .018). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 18.
Traumatic Event Exposure Predicting Expressive Suppression and Burnout with Supervisor Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.222**	0.133		
Path a_b	0.422	0.318		
Path b_b	0.16	0.107		
Path c_b	0.808^	0.473		
Supervisor support on burnout	-0.209**	0.048		
Interaction on burnout	-0.025	0.027		
Residual variance burnout	0.689**	0.067		
Residual variance suppression	0.454**	0.046		
Within level				
Path a_w	0.066^	0.039	0.075*	0.030
Path b_w	0.172**	0.041		
Path c_w	0.165**	0.042	0.061*	0.029
Residual variance burnout	0.326**	0.022		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> burnout; Path c_b/c_w = traumatic event -> burnout. Residual random variance of path b_w = .075** (S.E. .020). **$p < .01$, *$p < .05$, ^$p < .10$

Table 19.
Traumatic Event Exposure Predicting Expressive Suppression and Anxiety with Coworker Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.778**	0.106		
Path a_b	0.425	0.334		
Path b_b	0.271**	0.093		
Path c_b	0.862*	0.374		
Coworker support on anxiety	-0.087^	0.047		
Interaction on anxiety	-0.040^	0.024		
Residual variance anxiety	0.472**	0.052		
Residual variance suppression	0.452**	0.046		
Within level				
Path a_w	0.064	0.039	0.072*	0.030
Path b_w	0.117**	0.031		
Path c_w	0.239**	0.042	0.239**	0.042
Residual variance anxiety	0.241**	0.019		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. Residual random variance of path b_w = .036* (S.E. .015). **$p < .01$, *$p < .05$, ^$p < .10$

Table 20.
Traumatic Event Exposure Predicting Expressive Suppression and Depression with Coworker Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.527**	0.095		
Path a_b	0.433	0.332		
Path b_b	0.155*	0.074		
Path c_b	0.762*	0.322		
Coworker support on depression	-0.070^	0.041		
Interaction on depression	-0.029	0.021		
Residual variance depression	0.331**	0.048		
Residual variance suppression	0.453**	0.046		
Within level				
Path a_w	0.065^	0.039	0.072*	0.030
Path b_w	0.085**	0.027		
Path c_w	0.285**	0.044	0.170**	0.051
Residual variance depression	0.189**	0.017		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> depression; Path c_b/c_w = traumatic event -> depression. Residual random variance of path b_w = .027* (.012). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 21.
Traumatic Event Exposure Predicting Expressive Suppression and Sleep with Coworker Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.388**	0.080		
Path a_b	0.461	0.313		
Path b_b	0.060	0.068		
Path c_b	0.423	0.272		
Coworker support on sleep	-0.064^	0.036		
Interaction on sleep	-0.010	0.021		
Residual variance sleep	0.237**	0.031		
Residual variance suppression	0.452**	0.046		
Within level				
Path a_w	0.063	0.039	0.075*	0.030
Path b_w	0.123**	0.030		
Path c_w	0.213**	0.039	0.068*	0.031
Residual variance sleep	0.285**	0.018		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> sleep; Path c_b/c_w = traumatic event -> sleep. Residual random variance of path b_w = .017 (.010). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 22.
Traumatic Event Exposure Predicting Expressive Suppression and Rumination with Coworker Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.029**	0.101		
Path a_b	0.403	0.319		
Path b_b	0.168*	0.076		
Path c_b	0.946*	0.383		
Coworker support on rumination	-0.089*	0.039		
Interaction on rumination	-0.023	0.024		
Residual variance rumination	0.311**	0.038		
Residual variance suppression	0.457**	0.046		
Within level				
Path a_w	0.074^	0.040	0.075*	0.030
Path b_w	0.154**	0.035		
Path c_w	0.479**	0.044	0.124**	0.040
Residual variance rumination	0.286**	0.016		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> rumination; Path c_b/c_w = traumatic event -> rumination. Residual random variance of path b_w = .037** (.018). **$p < .01$, *$p < .05$, ^$p < .10$

Table 23.
Traumatic Event Exposure Predicting Expressive Suppression and Burnout with Coworker Social Support as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.205**	0.135		
Path a_b	0.444	0.322		
Path b_b	0.171^	0.102		
Path c_b	0.859^	0.465		
Coworker support on burnout	-0.220^	0.058		
Interaction on burnout	-0.063*	0.031*		
Residual variance burnout	0.708**	0.070		
Residual variance suppression	0.454**	0.046		
Within level				
Path a_w	0.064^	0.039	0.074*	0.030
Path b_w	0.167**	0.041		
Path c_w	0.163**	0.043	0.062*	0.030
Residual variance burnout	0.326**	0.022		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> burnout; Path c_b/c_w = traumatic event -> burnout. Residual random variance of path b_w = .070** (.020). **$p < .01$, *$p < .05$, ^$p < .10$

Table 24.
Traumatic Event Exposure Predicting Expressive Suppression and Anxiety with Organizational Constraints as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.810**	0.101		
Path a_b	0.414	0.332		
Path b_b	0.224*	0.092		
Path c_b	0.724*	0.350		
Organizational constraints on anxiety	0.409**	0.093		
Interaction on anxiety	0.129**	0.046		
Residual variance anxiety	0.440**	0.050		
Residual variance suppression	0.453**	0.046		
Within level				
Path a_w	0.066	0.040	0.075*	0.031
Path b_w	0.120**	0.030		
Path c_w	0.233**	0.042	0.127**	0.044
Residual variance anxiety	0.241**	0.019		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> anxiety; Path c_b/c_w = traumatic event -> anxiety. Residual random variance of path b_w = .033* (S.E. .014). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 25.
Traumatic Event Exposure Predicting Expressive Suppression and Depression with Organizational Constraints as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	1.558**	0.089		
Path a_b	0.417	0.334		
Path b_b	0.115	0.074		
Path c_b	0.626*	0.302		
Organizational constraints on depression	0.363**	0.081		
Interaction on depression	0.083^	0.043		
Residual variance depression	0.302**	0.048		
Residual variance suppression	0.454**	0.046		
Within level				
Path a_w	0.066^	0.040	0.075*	0.031
Path b_w	0.086**	0.027		
Path c_w	0.278**	0.043	0.171**	0.052
Residual variance depression	0.189**	0.017		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1892 at the person level. Average number of observations per person = 9.46. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> depression; Path c_b/c_w = traumatic event -> depression. Residual random variance of path b_w = .027 (S.E. .012). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 26.
Traumatic Event Exposure Predicting Expressive Suppression and Sleep with Organizational Constraints as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.410**	0.077		
Path a_b	0.437	0.313		
Path b_b	0.031	0.070		
Path c_b	0.314	0.264		
Organizational constraints on sleep	0.220**	0.069		
Interaction on sleep	-0.025	0.038		
Residual variance sleep	0.230**	0.030		
Residual variance suppression	0.454**	0.047		
Within level				
Path a_w	0.063	0.040	0.079*	0.031
Path b_w	0.124**	0.030		
Path c_w	0.211**	0.038	0.066*	0.031
Residual variance sleep	0.285**	0.018		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> sleep; Path c_b/c_w = traumatic event -> sleep. Residual random variance of path b_w = .017^ (S.E. .010). **$p < .01$, *$p < .05$, ^$p < .10$

Table 27.
Traumatic Event Exposure Predicting Expressive Suppression and Rumination with Organizational Constraints as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.064**	0.096		
Path a_b	0.377	0.322		
Path b_b	0.129^	0.076		
Path c_b	0.798*	0.374		
Organizational constraints on rumination	0.366**	0.074		
Interaction on rumination	0.115^	0.060		
Residual variance rumination	0.283**	0.035		
Residual variance suppression	0.458**	0.047		
Within level				
Path a_w	0.076^	0.041	0.078*	0.031
Path b_w	0.157**	0.036		
Path c_w	0.472**	0.044	0.125**	0.041
Residual variance rumination	0.286**	0.016		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> rumination; Path c_b/c_w = traumatic event -> rumination. Residual random variance of path b_w = .034^ (S.E. .019). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

Table 28.
Traumatic Event Exposure Predicting Expressive Suppression and Burnout with Organizational Constraints as a Moderator

Parameter	Fixed Effects		Random Effects	
	Estimate	S.E.	Estimate	S.E.
Between level				
Intercept	2.246**	0.130		
Path a_b	0.433	0.323		
Path b_b	0.104	0.104		
Path c_b	0.680	0.474		
Organizational constraints on burnout	0.607**	0.108		
Interaction on burnout	0.142*	0.060		
Residual variance burnout	0.659**	0.071		
Residual variance suppression	0.455**	0.047		
Within level				
Path a_w	0.065	0.039	0.077*	0.031
Path b_w	0.171**	0.040		
Path c_w	0.159**	0.042	0.062*	0.029
Residual variance burnout	0.326**	0.022		
Residual variance suppression	0.297**	0.024		

Note. Random intercept and slopes model; n = 1893 at the person level. Average number of observations per person = 9.47. Path a_b/a_w = traumatic event -> expressive suppression; Path b_b/b_w = expressive suppression -> burnout; Path c_b/c_w = traumatic event -> burnout. Residual random variance of path b_w = .069** (S.E. = .020). $^{**}p < .01$, $^{*}p < .05$, $^{\wedge}p < .10$

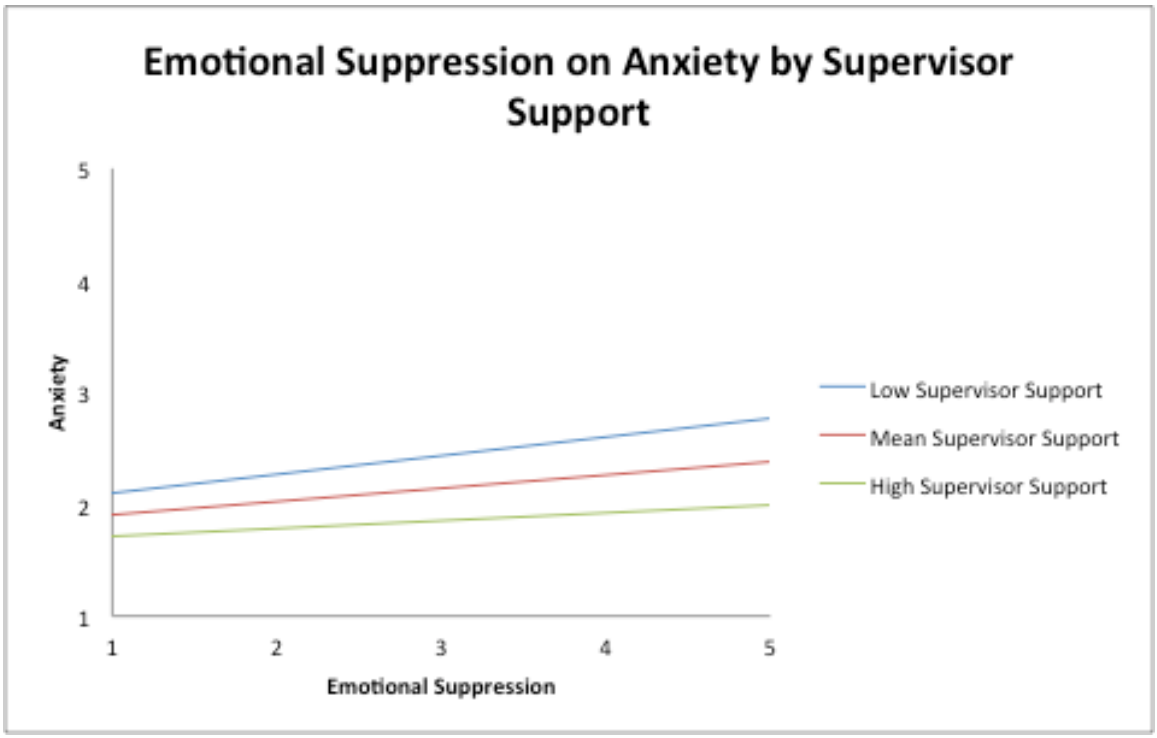

Figure 3. Interaction between emotional suppression and supervisor support on anxiety. The slope of emotional suppression on anxiety was significant when supervisor support was low (i.e., one standard deviation below the mean; $\Upsilon = 0.17, p < .05$) and was not significant when supervisor support was high (i.e., one standard deviation above the mean; $\Upsilon = 0.07, p > .05$).

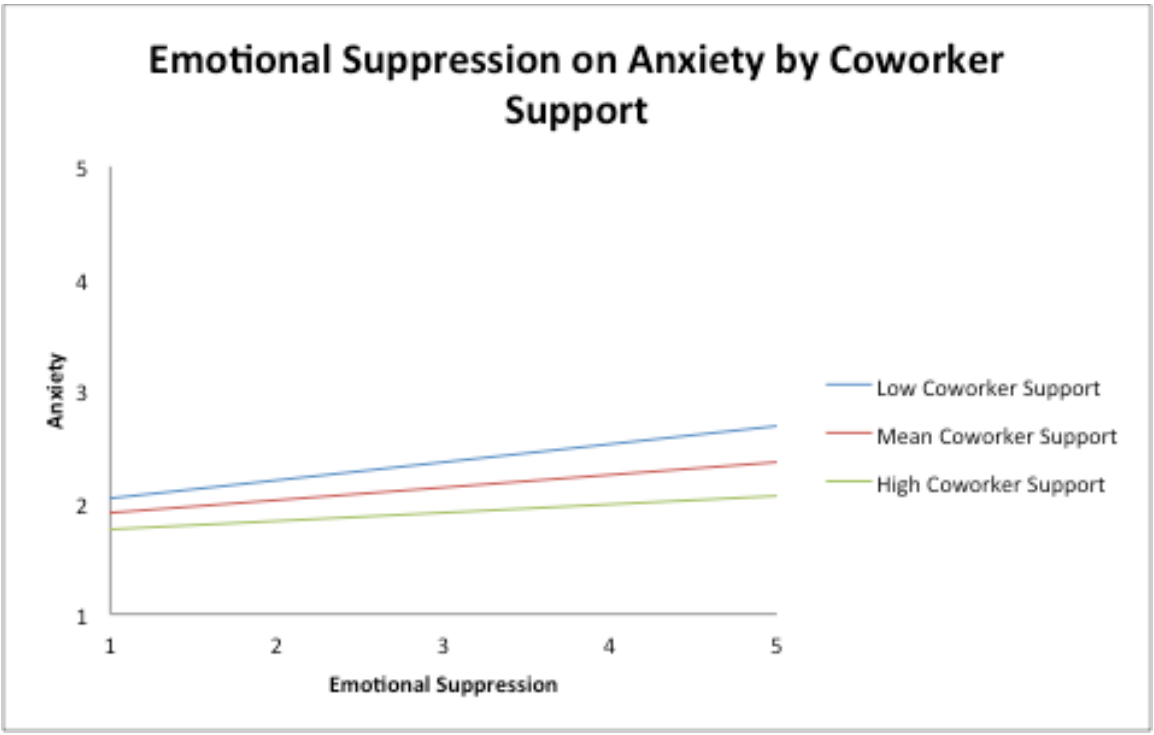

Figure 4. Interaction between emotional suppression and coworker support on anxiety. The slope of emotional suppression on anxiety was significant when coworker support was low (i.e., one standard deviation below the mean; $\Upsilon = 0.16, p < .05$) and was not significant when coworker support was high (i.e., one standard deviation above the mean; $\Upsilon = 0.07, p > .05$).

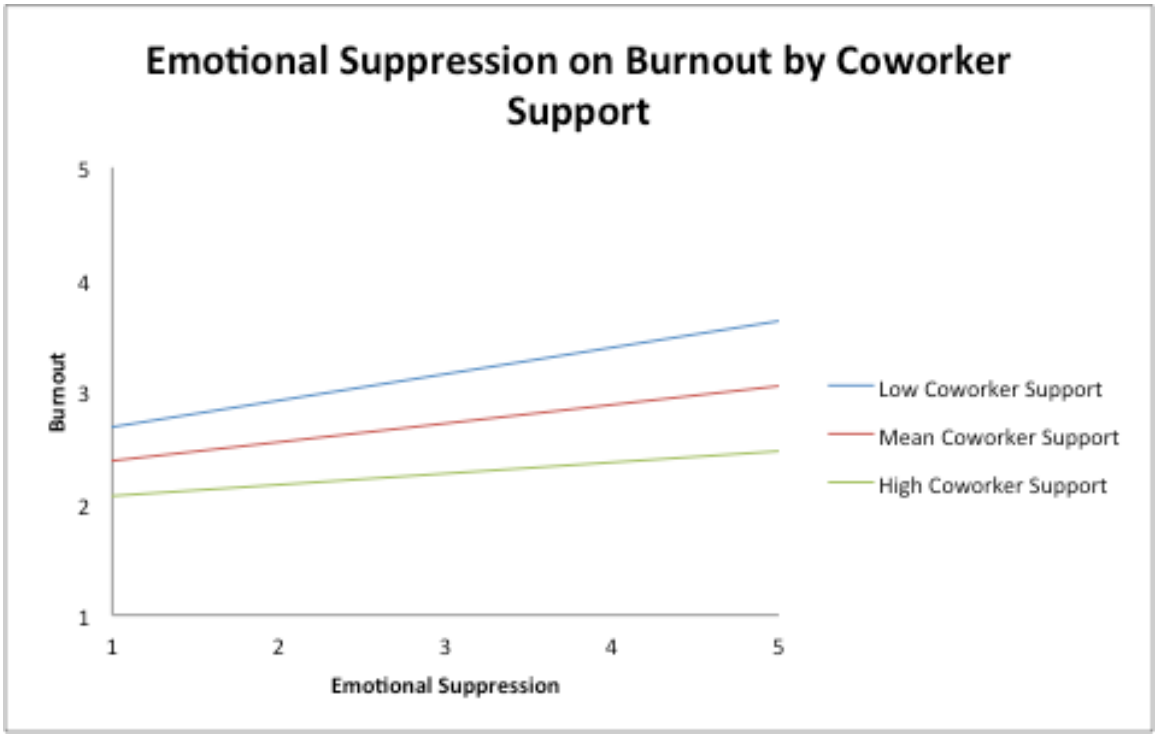

Figure 5. Interaction between emotional suppression and coworker support on burnout. The slope of emotional suppression on burnout was significant when coworker support was low (i.e., one standard deviation below the mean; $\Upsilon = 0.24, p < .05$) and was not significant when coworker support was high (i.e., one standard deviation above the mean; $\Upsilon = 0.10, p > .05$).

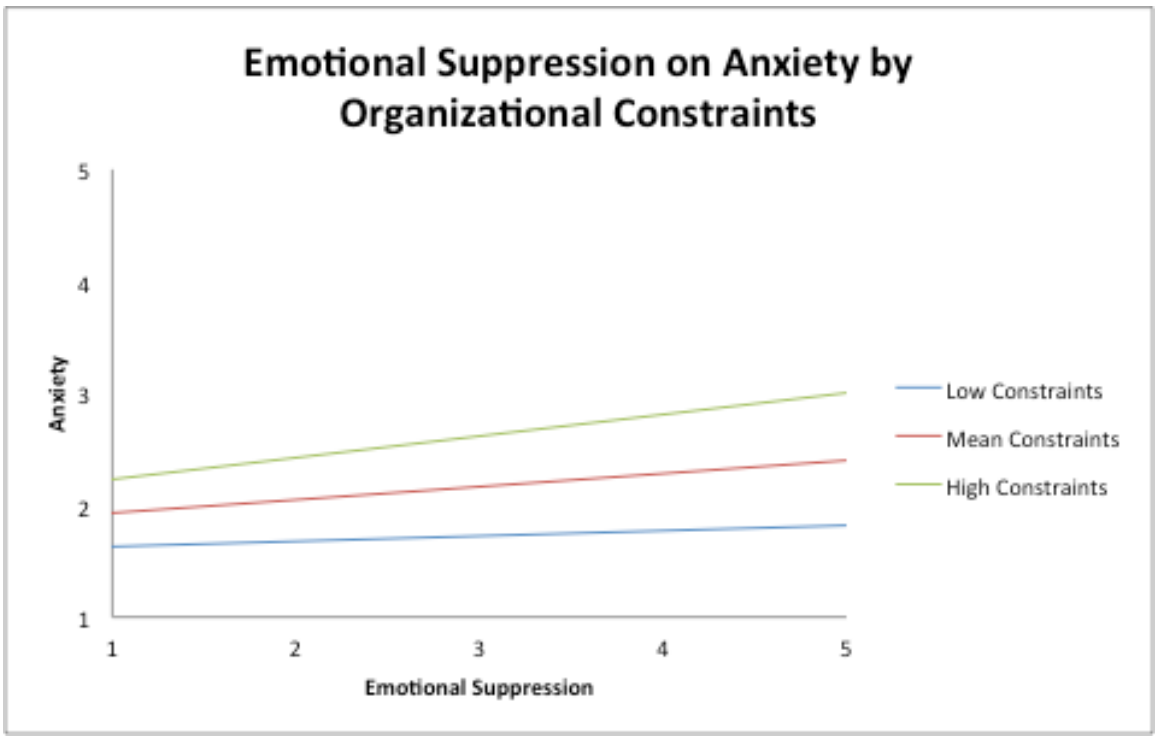

Figure 6. Interaction between emotional suppression and organizational constraints on anxiety. The slope of emotional suppression on anxiety was not significant when organizational constraints were low (i.e., one standard deviation below the mean; $\Upsilon = 0.05, p > .05$) and was significant when organizational constraints were high (i.e., one standard deviation above the mean; $\Upsilon = 0.19, p < .05$).

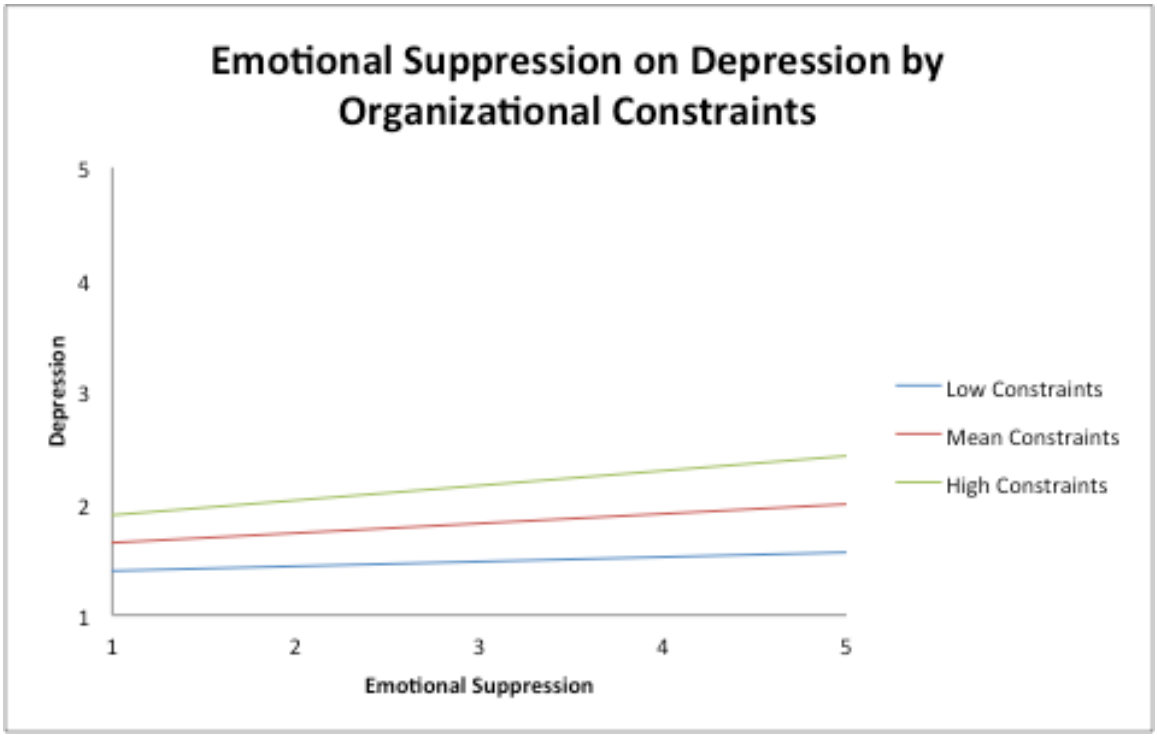

Figure 7. Interaction between emotional suppression and organizational constraints on depression. The slope of emotional suppression on depression was not significant when organizational constraints were low (i.e., one standard deviation below the mean; $\Upsilon = 0.04$, $p >$ .05) and was significant when organizational constraints were high (i.e., one standard deviation above the mean; $\Upsilon = 0.13$, $p < .05$).

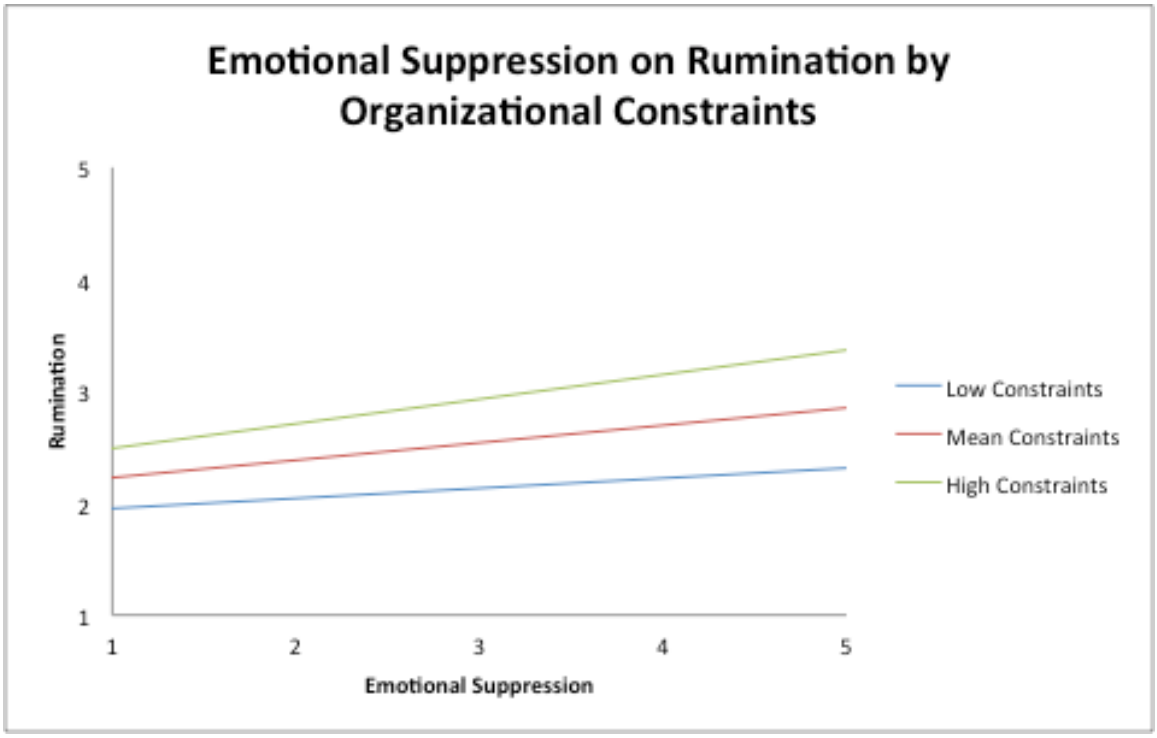

Figure 8. Interaction between emotional suppression and organizational constraints on rumination. The slope of emotional suppression on rumination was significant when organizational constraints were low (i.e., one standard deviation below the mean; $\Upsilon = 0.09, p < .05$) and was also significant when organizational constraints were high (i.e., one standard deviation above the mean; $\Upsilon = 0.22, p < .05$).

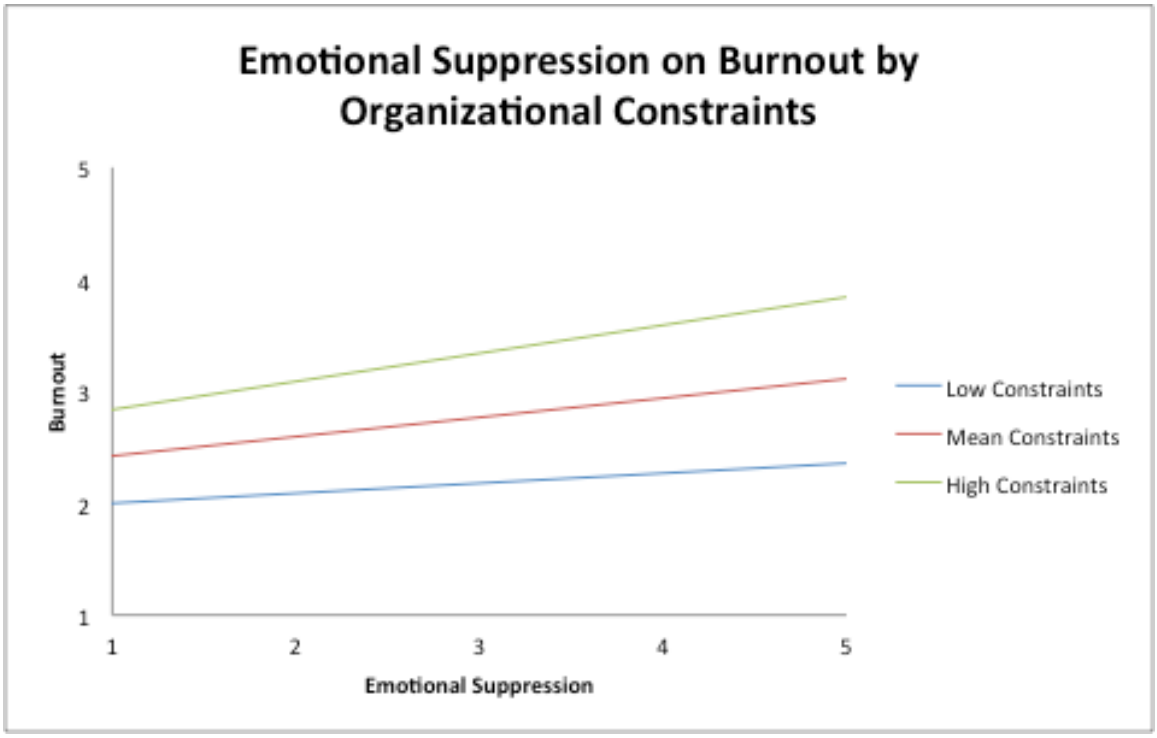

Figure 9. Interaction between emotional suppression and organizational constraints on burnout. The slope of emotional suppression on burnout was not significant when organizational constraints were low (i.e., one standard deviation below the mean; $\Upsilon = 0.09, p > .05$) and was significant when organizational constraints were high (i.e., one standard deviation above the mean; $\Upsilon = 0.25, p < .05$).

Chapter 4:

Discussion

The purpose of this study was to investigate the mechanisms by which traumatic event exposure leads to strain outcomes for paramedics. Overall, results demonstrated that traumatic event exposure is linked to weekly strain outcomes, namely burnout and PTS symptoms (i.e., anxiety, depression, rumination, and sleep disturbance). Additionally, while the link between traumatic event exposure and expressive suppression was weak, there was a consistently significant association between expressive suppression and each strain outcome. Tests of mediation demonstrated mixed results, with significant indirect effects for some outcomes and nonsignficant indirect effects for others. In terms of moderation analyses, implicit theories of expressive suppression did not appear to serve as a moderator in the relationship between traumatic event exposure and expressive suppression. Results were mixed regarding social support as a moderator of the relationship between expressive suppression and strain. Specifically, supervisor social support was not found to significantly moderate this relationship, though there was one instance of marginal significance (i.e., anxiety). Further, coworker social support served as a significant moderator in the relationship between expressive suppression and burnout, and was marginally significant for the relationship between expressive suppression and anxiety. Finally, organizational constraints were found to consistently serve as a moderator in the relationship between expressive suppression and strain.

Next, specific results will be discussed in detail. I will then follow with a discussion of theoretical implications, practical implications, limitations and future directions, and conclusions.

Direct Relationships Between Traumatic Event Exposure and Strain

Hypothesis 1 examined the direct relationship between traumatic event exposure and strain outcomes. Results of this analysis supported this hypothesis, such that traumatic event exposure was related to more anxiety, depression, sleep disturbance, rumination, and burnout. These results lend support to traditional stressor-strain models (e.g., Lazarus & Folkman, 1984) that suggest exposure to a stressor will be linked to greater strain. Further, though not hypothesized in this study, these relationships also held at the between-level of analysis. Specifically, examination of the between-person correlations shows that participants who experienced more traumatic events throughout the course of the study also reported higher aggregated levels of anxiety, depression, sleep disturbance, rumination, and burnout. This suggests that exposure to such stressors lead to strain both within a short (acute) timeframe of a week and a longer (chronic) timeframe of 10 weeks. This is in also in alignment with the Transactional Model of Stress, which suggests that exposure to stressors over time can lead to chronic strain (Lazarus & Folkman, 1984).

Traumatic Event Exposure and Expressive Suppression

Hypothesis 2 proposed that traumatic event exposure would be related to greater use of expressive suppression. Results of this analysis showed that this relationship was not significant across all of the tested models. Therefore, it appears that traumatic event exposure does not seem to predict expressive suppression.

Interestingly, an examination of the random effect for this path between traumatic event exposure and expressive suppression shows that this slope varies significantly across participants. That is, the relationship between traumatic event exposure and expressive suppression varies significantly within the study sample. This significant random effect was evident across all base mediation models (see Tables 4-8). This result provides evidence to suggest that this relationship between traumatic event exposure and expressive suppression may be moderated, such that only certain individuals will typically engage in expressive suppression following a traumatic event (Aguinis, Gottfredson, & Culpepper, 2013). In this case, it would be possible for the effects of different individual differences to balance each other out so that the overall effect is reflected as null. While this study did examine one individual difference that might moderate this relationship (i.e., implicit theories for expressive suppression), results of that analysis were not significant (see below for a detailed discussion of these results). Thus, there are likely additional individual differences that influence the degree to which traumatic event exposure is related to expressive suppression.

Also, it is worth mentioning that this relationship may have been attenuated, as traumatic event exposure was measured with a dichotomous variable. Further, the base rate of traumatic event exposure in this sample was somewhat low (i.e., on average, 26% of the paramedics reported at least one traumatic event in their weekly assessment, with a range of 20% to 37% of the sample reporting an event each week), which may also lead to attenuation of this estimate. If traumatic event exposure was measured with a scale that allowed for more variance (or if the base rate had been higher), it is possible that this relationship would have demonstrated significance.

Expressive Suppression and Strain

Hypothesis 3 proposed that expressive suppression would be related to greater anxiety, depression, sleep disturbance, rumination, and burnout. Results of this analysis support this hypothesis, as expressive suppression was related to each outcome in the expected direction. That is, on the weeks when participants used more expressive suppression, they were more likely to experience negative strain outcomes, such as burnout and PTS symptoms. This result is in line with research that suggests expressive suppression is not an adequate coping mechanism in alleviating the negative effects of stressor exposure (e.g., Blau et al., 2012; Shepherd & Wild, 2014). Specifically, as previously discussed, expressive suppression is not effective for a couple of reasons. First, this regulation technique does not adequately address the *experience* of the emotion, but rather only addresses the *expression* of emotion. Therefore, the negative emotions that result from the stressor exposure are not effectively eradicated, leading to continuous negative appraisals and ultimately strain (Gross & John, 2003). Second, expressive suppression requires significant cognitive effort, as individuals must continuously monitor themselves to ensure that they are sufficiently masking their emotions. This additional use of cognitive resources should be exhausting (Richards & Gross, 2000), thus leading to additional strain. Therefore, the results that link expressive suppression to strain are in line with my prediction that expressive suppression should not an effective coping mechanism.

Indirect Effects

Hypothesis 4 proposed that within individuals, expressive suppression would mediate the relationship between traumatic event exposure and strain outcomes. Results of this analysis were mixed, as significant indirect effects were only found for some outcomes (i.e., sleep disturbance, rumination, burnout).

These mixed results are likely due to the weak direct relationship between traumatic event exposure and expressive suppression. Specifically, for the models with anxiety and depression, the coefficient for the slope from expressive suppression to strain (i.e., the "b path") was strong enough so that when multiplied together with the weaker path from traumatic event exposure to expressive suppression (i.e., the "a path"), the resulting indirect effect was large enough to reach significance. However, for the other outcomes (i.e., sleep disturbance, rumination, and burnout), the paths from expressive suppression to strain were large enough to "carry" the indirect path to significance.

Therefore, the reasoning for these inconsistent findings greatly mirror the explanations outlined for the lack of significance of the relationship between traumatic event exposure and expressive suppression. For instance, as mentioned above, it is possible that the link between traumatic event exposure and expressive suppression may be moderated, and therefore this overall relationship is not significant, thus impacting the indirect effect. Further, it is possible that expressive suppression is simply not the emotion regulation technique of choice for this sample of paramedics, or perhaps they engage in a *combination* of emotion regulation techniques, and therefore expressive suppression is simply not the primary technique that they use to handle their emotions on the job.

Moderating Effect of Implicit Theories of Expressive Suppression

Hypothesis 5 proposed that implicit theories of expressive suppression would moderate the relationship between traumatic event exposure and expressive suppression, such that when implicit theories were "high" (i.e., incremental theorist), individuals would be more likely to engage in expressive suppression following a traumatic event rather than when implicit theories

were "low" (i.e., entity theorist). Results of this analysis, however, consistently failed to show support for this hypothesis.

I suspect that this lack of findings may be due to issues in conceptualizing the implicit theories variable. For instance, as mentioned in the introduction, being an "incremental theorist" in the context of this study means that an individual believes that he/she is capable of successfully changing his/her emotional expression. This is different from previous research that used the scale to examine the impacts of implicit theories of emotional *experience* on expressive suppression behaviors (Tamir et al., 2007). However, it is possible that such a distinction between emotional *expression* versus *experience* is not practical, as individuals may not be able to make this distinction. In this case, perhaps individuals who are "incremental theorists" are just more likely to engage in more adaptive coping mechanisms (e.g., cognitive reappraisal) rather than more or less expressive suppression. This would be in alignment with Tamir and colleagues' (2007) results that showed individuals who scored as an incremental theories on implicit theories of emotional experiences tended to engage in more adaptive coping mechanisms (rather than fewer maladaptive coping mechanisms).

Moderating Effect of Social Support

Hypothesis 6 hypothesized that social support would moderate the relationship between expressive suppression and strain outcomes, such that the relationship should be stronger when social support is high versus low. This moderation effect was tested separately for supervisor and coworker support. Results of this analysis suggest that the moderating effect for supervisor support was only marginally significant for the relationship between expressive suppression and anxiety. Further, coworker support served as a significant moderator for the relationship between expressive suppression and burnout. Finally, the moderating effect of coworker support was

marginally significant for one other outcome, namely anxiety. Overall, although these results were mixed, those that were significant are in alignment with past research that demonstrates the crucial role that social support, and especially coworker support, plays in alleviating strain outcomes for those in EMS (e.g., Lowery & Stokes, 2005; Regehr & Millar, 2007).

The fact that these findings were mixed may be due to a "levels" issue, as social support was measured as an overall variable, when it is possible that perceptions of support might vary across the weeks. In fact, some recent research suggests that social support does in fact vary significantly within weeks (e.g., Schreurs, van Emmerik, Günter, & Germeys, 2012). Therefore, it is possible that this relationship between social support and expressive suppression is more nuanced than that which was captured in the current study. Thus, future research may wish to consider examining social support as a state-level variable that may change within-person.

Moderating Effect of Organizational Constraints

Finally, Hypothesis 7 proposed that organizational constraints would moderate the relationship between expressive suppression and strain, such that when organizational constraints were high (versus low), the relationship between expressive suppression and strain would become stronger. This hypothesis was partially supported, with models including anxiety and burnout being significant, and with models including rumination and depression being marginally significant.

Overall, these results largely support the postulation that organizational constraints serve as an additional stressor that serves to increase the relationship between maladaptive emotional regulation and strain. Specifically, expressive suppression does not appear to effectively decrease the negative implications of stressor exposure. Such ineffective emotional coping seems to intensify under conditions of organizational constraints, thus leading to a greater likelihood of

experiencing strain outcomes, such as PTS symptoms and burnout. These results are consistent with those of Donnelly (2011), which found an interaction between critical incident stress (i.e., exposure to traumatic events) and chronic organizational stress (e.g., organizational constraints) in predicting PTS symptoms within a sample of EMS personnel.

Theoretical Implications

This study has various implications for theory. For instance, as previously mentioned, the majority of research related to emotion regulation in the workplace consists of emotional labor studies. This body of research is primarily focused upon the customer service domain (Cheung & Lun, 2015). This study builds upon our existing knowledge by examining the processes of emotion regulation within another environment that is very different from customer service. Specifically, the emergency medical services are high-risk and ever-changing, and therefore existing research related to customer service may not generalize to EMS populations.

Additionally, the current study builds upon the general emotion regulation literature, as it examines emotion regulation at the state-level, rather than the trait-level. This is noteworthy, as the vast majority of field research considers workplace emotion regulation/coping as a trait-level variable that does not vary within-person (Grandey & Gabriel, 2015). In the current study, the ICC(1) for expressive suppression was 0.59, meaning that 41% of the total variance in expressive suppression can be accounted for by within-person variance. Therefore, results of this study suggest that expressive suppression does in fact have meaningful variance both between *and* within person. As a result, it is imperative for future research to recognize this within-person variability by considering emotion regulation techniques from a state- (versus trait-) level perspective.

Similarly, this study extends EMS research that investigates traumatic event exposure. Specifically, previous research has consistently relied on retrospective recall by asking first responders if they had witnessed a traumatic event over a long period of time, such as 6 months or longer (e.g., Donnelly & Bennett, 2014; Regehr et al., 2002; Shepherd & Wild, 2014). Although the current study does rely on some retrospective recall (as discussed in the limitations section below), this research provides great improvement over previous studies, as it captures traumatic events and strain outcomes much closer to real time. This allows for the ability to get a better understanding of the immediate implications of traumatic event exposure, with fewer opportunities for other confounding variables to impact our ability to distill these relationships.

Finally, it is my hope that this study paves the way for future research to be conducted on mental health of EMS professionals. Research that specifically examines this vulnerable population is lacking (Jones, 2017), but due to the nature of their job, they are at risk for exposure to a great deal of workplace stressors (e.g., traumatic events). Additional research is needed, as is reflected in the comments of various participants after the study, such as, "I appreciate that someone is looking into how being a Paramedic affects us on a mental level. It's a highly underrepresented profession and it's an important job,", "EMS is normally the forgotten children for the medical field especially when it comes to emergency services. Thank you for thinking of us", and "Thank you very much for researching a subject that still receives little public attention. I truly do hope that your very commendable work on this subject will help shed further light on the behavioral health (or lack thereof) of first responders". It is imperative that research continues to examine the experience of employees within this incredibly important field of EMS.

Practical Implications

Practically speaking, organizations may use the results of this study to help inform them of potential changes that can lead to increased employee wellbeing. For instance, in alignment with past research related to emotion regulation (for a review, see Gross, 2015), results of the current study provide evidence to suggest that expressive suppression is ineffective and thus maladaptive. Therefore, EMS companies may wish to consider offering emotion regulation training to their employees so that they may acquire skills that assist them in properly dealing with the emotions that arise following workplace stressors. Recent empirical evidence supports this notion, such as a recent study by Pogrebtsova, Craig, Chris, O'Shea, and González-Morales (2017) that showed emotion regulation can in fact be effectively trained.

Additionally, by looking at various moderators, this study demonstrates that context matters, such that certain external factors play a role in the degree to which expressive suppression actually leads to strain outcomes, such as burnout and PTS symptoms. Perhaps most importantly, evidence from this research shows that organizational constraints seem to be an important contextual factor. Further, there was some evidence that coworker support also plays a buffering role in the expressive suppression-strain relationship. These results provide another "touch point" by which organizations can introduce meaningful interventions in order to improve employee health outcomes. For instance, attempts to decrease organizational constraints, such as by decreasing bureaucratic "red tape" and by increasing access to necessary equipment and supplies may be quite effective. Further, results of this study provide some evidence to suggest that it might be beneficial for organizations to foster coworker support. An increase in emotional support, and especially coworker support, should serve as an additional resource to employees.

This additional support should ultimately help employees so that they are more able to handle the negative effects of traumatic events and/or maladaptive emotional regulation.

Finally, results suggest that it would be optimal for organizations to implement the aforementioned solutions in tandem. That is, by implementing interventions that directly address *both* emotion regulation techniques and contextual factors (e.g., organizational constraints), employees may reap the most benefits in order to alleviate the negative impact of expressive suppression on work-related strain. While this may seem like a great deal of investment on behalf of the organization, it is imperative that EMS professionals have the resources that they need in order to combat the negative impact of traumatic event exposure.

Limitations and Future Directions

Though this study has many important implications, it is not without limitations. For instance, this study depended on retrospective recall, as participants were asked each week to note and describe any traumatic or troubling events that occurred over the past seven days. It could be argued that events from this study may be more memorable by the fact that they are categorized as traumatic. However, it is unlikely that individuals would have a perfect recollection of all events that occurred over the past week, and therefore, it would have been ideal to measure events as they occurred (i.e., experience sampling; Fisher & To, 2012). Overall, it is my hope that by attaining these data each week, this study was able to combat most bias due to retrospective recall. Regardless, future research on traumatic event exposure would benefit by incorporating less reliance on retrospective recall in order to gain a better picture of how these acute stressors lead to strain outcomes.

Additionally, it is important to recognize that all measures in this study were self-reported, and therefore it is possible that there may be the potential for common-method bias.

However, it should be noted that it is unlikely that common method bias would have produced the moderator effects (e.g.,Schreurs et al., 2012). Further, this issue is partially combated by collecting data at different time points (Evans, 1985; Siemsen, Roth, & Oliveira, 2010). Still, it would be optimal for future studies to incorporate additional sources of data. For instance, researchers should consider incorporating objective health data sources, such as blood pressure monitors, actigraphy, and cortisol in order to better understand the physiological effects of traumatic event exposure. Further, it would be interesting for researchers to gather data from other sources, such as spouses (for instance, to gather measures of emotion regulation and/or additional important outcomes such as work and family conflict) or co-workers (for instance, to gather measures of social support).

A further limitation of this study has to do with the scale that measures expressive suppression. Specifically, some participants provided feedback to suggest that the expressive suppression measure was somewhat confusing (e.g., "The question battery concerning 'changing the way one thinks about a situation' to affect how they feel about it was rather unclear to me in the wording"). This issue could have impacted the study by attenuating relationships that included this scale. However, internal consistency reliability of this scale was acceptable across the study weeks (with an average alpha of 0.85 across the ten weeks), thus alleviating some of this concern for potential attenuation. Future research may wish to examine expressive suppression with the use of another scale.

Also, it would be useful for future research to investigate the efficacy of other emotion regulation techniques. For instance, although this research focused upon expressive suppression, which is a maladaptive technique, it would be informative to investigate techniques such as cognitive reappraisal, which is considered to be more adaptive and effective. Further, it would be

important for future research to consider these emotion regulation techniques in the same study. That is, these techniques do not occur in a vacuum, and therefore it is likely that individuals do not use just *one* in their attempts to regulate their emotions. For instance, it is quite possible that an individual may use both expressive suppression *and* cognitive reappraisal when responding to a stressor. Future research should consider these issues when designing and executing additional studies involving emotion regulation.

In addition to the aforementioned suggestions, there are various other issues that future studies may wish to examine that build upon this study. For instance, it would be beneficial to investigate other individual differences and contextual factors that may influence the degree to which an individual is more or less likely to use certain emotion regulation strategies (e.g., expressive suppression) in the wake of a traumatic event. Further, there are additional stressors that should be considered, in addition to traumatic event exposure. For instance, many paramedics noted in their post-study feedback that one major stressor is the fact that many people call an ambulance as a "taxi service", which in turn impacts the paramedics' ability to assist a person who might actually need help. Overall, much more work needs to be done in order to understand the array of stressors that are unique to EMS, and also how such exposure to these stressors impacts the health and wellbeing of EMS employees.

Conclusion

The current study aimed to investigate the mechanisms by which traumatic event exposures predict PTS symptoms and burnout within a sample of Paramedics. Results of this study suggest that traumatic events are consistently linked to these strain outcomes. Further, in this study traumatic events did not directly predict expressive suppression, indicating that individuals may use other/additional regulation strategies following exposure to a traumatic

event. However, expressive suppression was consistently linked to strain, and this link was stronger under conditions of high organizational constraints (and was sometimes weaker under conditions of high social support). Overall, this study builds upon previous research by examining an incredibly understudied population and by examining traumatic event exposure and emotion regulation with a weekly diary design. It is my hope that future research continues to build upon this study in order to get a better understanding of what organizations can do in order to alleviate the negative outcomes related to traumatic event exposure within the emergency medical services.

References

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217-237.

Alexander, D. A., & Klein, S. (2001). Ambulance personnel and critical incidents. *The British Journal of Psychiatry, 178*(1), 76-81.

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*: American Psychiatric Publishing.

Andel, S. A. (2017). An investigation into the emotional experiences of emergency medical service professionals. *Unpublished manuscript*.

Bakker, A. B., Demerouti, E., & Euwema, M. C. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology, 10*(2), 170-180.

Bennett, P., Williams, Y., Page, N., Hood, K., & Woollard, M. (2004). Levels of mental health problems among UK emergency ambulance workers. *Emergency Medicine Journal, 21*(2), 235-236.

Berger, W., Coutinho, E. S., Figueira, I., Marques-Portella, C., Luz, M. P., Neylan, T. C., Marmar, C. R., & Mendlowicz, M. V. (2012). Rescuers at risk: a systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychiatry and Psychiatric Epidemiology, 47*(6), 1001-1011. doi:10.1007/s00127-011-0408-2

Blau, G., Bentley, M. A., Eggerichs, J., Chapman, S. A., & Viswanathan, K. S. (2014). Are There Differences Between Male Versus Female EMS Professionals on Emotional Labor and Job Satisfaction? *Journal of Behavioral Health, 3*(2), 82-86.

Boden, M. T., Westermann, S., McRae, K., Kuo, J., Alvarez, J., Kulkarni, M. R., Gross, J. J., & Bonn-Miller, M. O. (2013). Emotion regulation and posttraumatic stress disorder: A prospective investigation. *Journal of Social and Clinical Psychology, 32*(3), 296.

Boyle, M. V. (2005). "You Wait Until You Get Home": Emotional Regions, Emotional Process Work, and the Role of Onstage and Offstage Support. In C. E. J. Hartel, W. J. Zerbe, & N. M. Ashkanasy (Eds.), *Emotions in Organisational Behaviour* (pp. 45-65). New Jersey: Lawrence Erlbaum Associates.

Bryk, A. S., & Raudenbush, S. W. (1992). Hierarchical linear models: Applications and data analysis: Newbury Park, CA: Sage.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Research, 28*(2), 193-213.

Cheung, F., & Lun, V. M. C. (2015). Emotional Labor and Occupational Well-Being A Latent Profile Analytic Approach. *Journal of Individual Differences, 36*(1), 30-37. doi:10.1027/1614-0001/a000152

Compas, B. E., Jaser, S. S., Dunbar, J. P., Watson, K. H., Bettis, A. H., Gruhn, M. A., & Williams, E. K. (2014). Coping and emotion regulation from childhood to early adulthood: Points of convergence and divergence. *Australian Journal of Psychology, 66*(2), 71-81.

Cranford, J. A., Shrout, P. E., Iida, M., Rafaeli, E., Yip, T., & Bolger, N. (2006). A procedure for evaluating sensitivity to within-person change: Can mood measures in diary studies detect change reliably? *Personality and Social Psychology Bulletin, 32*(7), 917-929.

De Castella, K., Goldin, P., Jazaieri, H., Ziv, M., Dweck, C. S., & Gross, J. J. (2013). Beliefs about emotion: Links to emotion regulation, well-being, and psychological distress. *Basic and Applied Social Psychology, 35*(6), 497-505.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499-512.

Diefendorff, J. M., Richard, E. M., & Yang, J. X. (2008). Linking emotion regulation strategies to affective events and negative emotions at work. *Journal of Vocational Behavior, 73*(3), 498-508. doi:10.1016/j.jvb.2008.09.006

Donnelly, E. (2011). Work-related stress and posttraumatic stress in emergency medical services. *Prehospital Emergency Care, 16*(1), 76-85.

Donnelly, E. A., & Bennett, M. (2014). Development of a critical incident stress inventory for the emergency medical services. *Traumatology: An International Journal, 20*(1), 1-8. doi:10.1177/1534765613496646

Dweck, C. S. (1996). Implicit theories as organizers of goals and behavior. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 69-90). New York: Guilford Press.

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality and development. 1999*. New York: Psychology Press.

Evans, M. G. (1985). A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes, 36*(3), 305-323.

Fisher, C. D., & To, M. L. (2012). Using experience sampling methodology in organizational behavior. *Journal of Organizational Behavior, 33*(7), 865-877.

Frone, M. R. (2015). Relations of negative and positive work experiences to employee alcohol use: Testing the intervening role of negative and positive work rumination. *Journal of Occupational Health Psychology, 20*(2), 148.

Grandey, A. A. (2000). Emotional regulation in the workplace: A new way to conceptualize emotional labor. *Journal of Occupational Health Psychology, 5*(1), 95.

Grandey, A. A., & Gabriel, A. S. (2015). Emotional labor at a crossroads: Where do we go from here? *The Annual Review of Organizational Psychology and Organizational Behavior, 2*, 323-349.

Gross, J. J. (1998a). Antecedent-and response-focused emotion regulation: divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74*(1), 224.

Gross, J. J. (1998b). The emerging field of emotion regulation: an integrative review. *Review of General Psychology, 2*(3), 271.

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*(3), 281-291.

Gross, J. J. (2010). Emotion regulation. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of Emotions*: Guilford Press.

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry, 26*(1), 1-26.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362. doi:10.1037/0022-3514.85.2.348

Gross, J. J., & Levenson, R. W. (1993). Emotional suppression: physiology, self-report, and expressive behavior. *Journal of Personality and Social Psychology, 64*(6), 970.

Halpern, J., Gurevich, M., Schwartz, B., & Brazeau, P. (2009). What makes an incident critical for ambulance workers? Emotional outcomes and implications for intervention. *Work & Stress, 23*(2), 173-189. doi:10.1080/02678370903057317

Halpern, J., Maunder, R. G., Schwartz, B., & Gurevich, M. (2011). Identifying risk of emotional sequelae after critical incidents. *Emergency Medicine Journal, 28*(1), 51-56. doi:10.1136/emj.2009.082982

Hoyt, M. A., Thomas, K. S., Epstein, D. R., & Dirksen, S. R. (2009). Coping style and sleep quality in men with cancer. *Annals of Behavioral Medicine, 37*(1), 88-93.

Hülsheger, U. R., & Schewe, A. F. (2011). On the costs and benefits of emotional labor: a meta-analysis of three decades of research. *Journal of Occupational Health Psychology, 16*(3), 361.

Hurrell Jr, J. J., Nelson, D. L., & Simmons, B. L. (1998). Measuring job stressors and strains: Where we have been, where we are, and where we need to go. *Journal of Occupational Health Psychology, 3*(4), 368-389. doi:10.1037/1076-8998.3.4.368

Jones, S. (2017). Describing the Mental Health Profile of First Responders: A Systematic Review. *Journal of the American Psychiatric Nurses Association, 23*(3), 200-214.

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress, 19*(3), 192-207.

Lawrence, S. A., Gardner, J., & Callan, V. J. (2007). The support appraisal for work stressors inventory: Construction and initial validation. *Journal of Vocational Behavior, 70*(1), 172-204.

Lazarus, R. S. (2006). *Stress and emotion: A new synthesis*: Springer Publishing Company.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer Publishing Company.

Leavy, R. L. (1983). Social support and psychological disorder: A review. *Journal of Community Psychology, 11*(1), 3-21. doi:10.1002/1520-6629

Lee, R. T., Lovell, B. L., & Brotheridge, C. M. (2010). Tenderness and steadiness: Relating job and interpersonal demands and resources with burnout and physical symptoms of stress in Canadian physicians. *Journal of Applied Social Psychology, 40*(9), 2319-2342.

Lowery, K., & Stokes, M. A. (2005). Role of peer support and emotional expression on posttraumatic stress disorder in student paramedics. *Journal of Traumatic Stress, 18*(2), 171-179.

Mastracci, S., Guy, M. E., & Newman, M. A. (2012). *Working on the Razor's Edge: Emotional Labor in Crisis Response*: Armonk, NY: ME Sharpe, Inc.

McNair, D. M., Lorr, M., & Droppleman, L. F. (1992). *Profile of mood states*: Educational and industrial testing service San Diego, CA.

Mikolajczak, M., Tran, V., Brotheridge, C. M., & Gross, J. J. (2009). Using an emotion regulation framework to predict the outcomes of emotional labor. *Emotions in Groups, Organizations and Cultures* (Vol. 5, pp. 245-273): Emerald Group Publishing Limited.

Miller, L. (1995). Tough guys: Psychotherapeutic strategies with law enforcement and emergency services personnel. *Psychotherapy: Theory, Research, Practice, Training, 32*(4), 592.

Mitani, S., Fujita, M., Nakata, K., & Shirakawa, T. (2006). Impact of post-traumatic stress disorder and job-related stress on burnout: A study of fire service workers. *The Journal of Emergency Medicine, 31*(1), 7-11.

Moore, S. A., Zoellner, L. A., & Mollenholt, N. (2008). Are expressive suppression and cognitive reappraisal associated with stress-related symptoms? *Behaviour Research and Therapy, 46*(9), 993-1000.

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus User's Guide: Statistical Analysis with Latent Variables*: Muthén & Muthén.

Newland, C., Barber, E., Rose, M., & Young, A. (2015). Critical stress. Survey reveals alarming rates of ems provider stress and thoughts of suicide. *JEMS: A Journal of Emergency Medical Services, 40*(10), 30-34.

Nezlek, J. (2012). Multilevel modeling analyses of diary-style data. *Handbook of research methods for studying daily life*, 357-383.

Pindek, S., & Spector, P. E. (2016). Organizational constraints: a meta-analysis of a major stressor. *Work & Stress, 30*(1), 7-25. doi:10.1080/02678373.2015.1137376

Pogrebtsova, E., Craig, J., Chris, A., O'Shea, D., & González-Morales, M. G. (2017). Exploring daily affective changes in university students with a mindful positive reappraisal intervention: A daily diary randomized controlled trial. *Stress and Health*.

Pow, J., King, D. B., Stephenson, E., & DeLongis, A. (2016). Does Social Support Buffer the Effects of Occupational Stress on Sleep Quality Among Paramedics? A Daily Diary Study. *Journal of Occupational Health Psychology*.

Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods, 15*(3), 209.

Regehr, C., & Bober, T. (2005). *In the line of fire: Trauma in the emergency services*: Oxford University Press.

Regehr, C., Goldberg, G., & Hughes, J. (2002). Exposure to human tragedy, empathy, and trauma in ambulance paramedics. *American Journal of Orthopsychiatry, 72*(4), 505-513. doi:10.1037/0002-9432.72.4.505

Regehr, C., & Millar, D. (2007). Situation critical: High demand, low control, and low support in paramedic organizations. *Traumatology, 13*(1), 49.

Revicki, D. A., & Gershon, R. R. (1996). Work-related stress and psychological distress in emergency medical technicians. *Journal of Occupational Health Psychology, 1*(4), 391.

Revicki, D. A., Whitley, T. W., Landis, S. S., & Allison, E. J. (1988). Organizational characteristics, occupational stress, and depression in rural emergency medical technicians. *The Journal of Rural Health, 4*(2), 73-83.

Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: the cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology, 79*(3), 410.

Ryu, E. (2015). The role of centering for interaction of level 1 variables in multilevel structural equation models. *Structural Equation Modeling: A Multidisciplinary Journal, 22*(4), 617-630.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior, 25*(3), 293-315.

Schreurs, B. H., van Emmerik, H., Günter, H., & Germeys, F. (2012). A weekly diary study on the buffering role of social support in the relationship between job insecurity and employee performance. *Human Resource Management, 51*(2), 259-279.

Scott, B. A., Barnes, C. M., & Wagner, D. T. (2012). Chameleonic or consistent? A multilevel investigation of emotional labor variability and self-monitoring. *Academy of Management Journal, 55*(4), 905-926.

Shakespeare-Finch, J., Gow, K., & Smith, S. (2005). Personality, coping and posttraumatic growth in emergency ambulance personnel. *Traumatology, 11*(4), 325.

Shepherd, L., & Wild, J. (2014). Emotion regulation, physiological arousal and PTSD symptoms in trauma-exposed individuals. *Journal of Behavior Therapy and Experimental Psychiatry, 45*(3), 360-367.

Siemsen, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. *Organizational Research Methods, 13*(3), 456-476.

Smith, C. A., & Lazarus, R. S. (1993). Appraisal components, core relational themes, and the emotions. *Cognition & Emotion, 7*(3-4), 233-269.

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology, 3*(4), 356.

Stanley, I. H., Hom, M. A., & Joiner, T. E. (2016). A systematic review of suicidal thoughts and behaviors among police officers, firefighters, EMTs, and paramedics. *Clinical Psychology Review, 44*, 25-44.

Sterud, T., Ekeberg, O., & Hem, E. (2006). Health status in the ambulance services: a systematic review. *BMC Health Services Research, 6*, 82. doi:10.1186/1472-6963-6-82

Tamir, M., John, O. P., Srivastava, S., & Gross, J. J. (2007). Implicit theories of emotion: affective and social outcomes across a major life transition. *Journal of Personality and Social Psychology, 92*(4), 731.

Tracy, S. J., & Tracy, K. (1998). Emotion labor at 911: A case study and theoretical critique. *Journal of Applied Communication Research, 26*(4), 390-411. doi:10.1080/00909889809365516

Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior, 54*(2), 314-334.

Wastell, C. A. (2002). Exposure to trauma: The long-term effects of suppressing emotional reactions. *The Journal of Nervous and Mental Disease, 190*(12), 839-845.

Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: a meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin, 138*(4), 775-808. doi:10.1037/a0027600

Xanthopoulou, D., Bakker, A. B., Dollard, M. F., Demerouti, E., Schaufeli, W. B., Taris, T. W., & Schreurs, P. J. (2007). When do job demands particularly predict burnout? The moderating role of job resources. *Journal of Managerial Psychology, 22*(8), 766-786.

Appendix A

Informed Consent

INFORMED CONSENT TO PARTICIPATE IN RESEARCH
Information to Consider Before Taking Part in this Research Study

IRB Study #Pro00027767

Researchers at the University of South Florida (USF) study many topics. To do this, we need the help of people who agree to take part in a research study. This form tells you about this research study. We are asking you to take part in a research study that is called "The effects of weekly work stress on wellbeing". The person who is in charge of this research study is Stephanie Andel, M.A. This person is called the Principal Investigator.

PURPOSE OF THE STUDY
You are being asked to participate because you are a paramedic who works at least 30 hours a week who consistently goes out on emergency calls. The purpose of this study is to investigate how your work experiences influence your wellbeing.

STUDY PROCEDURES
If you take part in this study, you will be asked to answer questions about your current occupational and emotional experiences. All surveys are confidential, so do not put your name or identifying information on it.

Specifically, you will be asked to complete:

1. An initial Time 1 survey via Qualtrics. You will take the Time 1 survey after watching a short online training video. This video will teach you to make data entries throughout the study period (10 weeks; see (2) below) and how your confidentiality will be protected throughout the study. The Time 1 survey should take you approximately 10-15 minutes to complete.
2. Weekly surveys for 10 work weeks. Each weekly survey should take no more than 5-10 minutes to complete. All weekly surveys will be administered online, and require access to your email on a computer or smart phone.

ALTERNATIVES/VOLUNTARY PARTICIPATION/WITHDRAWAL
You have the alternative to choose not to participate in this research study.

You should only take part in this study if you want to volunteer; you are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to

receive if you stop taking part in this study. Your decision to participate or not to participate will not affect your job status.

BENEFITS & RISKS

By participating in this study, you will aid in the advancement of the work-stress literature by revealing how work stress affects sleep, well-being, and job related outcomes. This research is considered to be minimal risk.

COMPENSATION

By participating in this study, you will receive an e-gift card worth up to $60 as a token of my appreciation. Specifically, for each week that you complete a weekly survey (after the baseline survey), you will earn $5. Further, if you complete all 10 weekly surveys, you will get a $10 bonus added to your e-giftcard. Thus, you can receive an e-giftcard worth a maximum of $60. Upon completion of the data collection period, I will send you the e-giftcard via email.

PRIVACY & CONFIDENTIALITY

We must keep your study records as confidential as possible. It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. However, certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

- The research team, including the Principal Investigator, the Advising Professor, and all other research staff.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety. These include:
    - The University of South Florida Institutional Review Board (IRB) and the staff that work for the IRB. Other individuals who work for USF that provide other kinds of oversight may also need to look at your records.
    - The Department of Health and Human Services (DHHS)
    - The National Institute for Occupational Safety and Health (NIOSH). NIOSH has awarded me a grant to make this study possible. As a result, NIOSH will have access to all data collected through this study.
- It is possible, although unlikely, that unauthorized individuals could gain access to your responses. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet. However, your participation in this online survey involves risks similar to a person's everyday use of the Internet.

CONTACT INFORMATION

If you have any questions about your rights as a research participant, please contact the USF IRB at (813) 974-5638. If you have questions regarding the research, please contact the Principal Investigator at CAS-PSYHealthRsch@usf.edu.

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are. You can print a copy of this consent form for your records.

If you agree please proceed with the survey.

Appendix B

Screening Survey Questions

At what level are you currently practicing as an EMS provider?

( ) *None*

( ) *Emergency Medical Responder*

( ) *Emergency Medical Technician (Basic)*

( ) *Emergency Medical Technician - Intermediate.* The Emergency Medical Technician - Intermediate level should only be used in states in which individuals are licensed at this level. As states transition to the National EMS Scope of Practice Model, it is anticipated that there will be no new Emergency Medical Technician - Intermediate licenses granted.

( ) *Advanced Emergency Medical Technician.* The advanced Emergency Medical Technician level should only be used in states in which individuals are licensed at this level.

( ) *Paramedic*

As a paramedic, do you primarily provide direct patient care?

( ) Yes

( ) No

In a typical week, how many hours do you work as a paramedic?

( ) Less than 30 hours

( ) 30 or more hours

On average, how many calls do you respond to in a typical week as a paramedic?

( ) Fewer than 10

( ) 10 or more

Appendix C

Baseline (Time 0) Survey Measures

Supervisor Social Support

How much can you rely on your DIRECT SUPERVISOR to (1 = *not at all*; 5 = *a great deal*):

1. ...help you feel better when you experience work-related problems?
2. ...listen to you when you need to talk about work-related problems?
3. ...be sympathetic and understanding about your work-related problems?

Coworker Social Support

How much can you rely on your COWORKERS to (1 = *not at all*; 5 = *a great deal*):

1. ...help you feel better when you experience work-related problems?
2. ...listen to you when you need to talk about work-related problems?
3. ...be sympathetic and understanding about your work-related problems?

Organizational Constraints (Spector & Jex, 1998)

How often do you find it difficult or impossible to do your job because of… (1 = *never*; 5 = *very often*):

1. Poor equipment or supplies.
2. Organizational rules and procedures.
3. Other employees.
4. Your supervisor.
5. Lack of equipment or supplies.
6. Inadequate training.
7. Interruptions by other people.
8. Lack of necessary information about what to do or how to do it.
9. Conflicting job demands.
10. Inadequate help from others.
11. Incorrect instructions.

Implicit Theories about Emotion Expression

Please indicate the degree to which you agree with the following statements (1 = *strongly disagree*; 5 = *strongly agree*):

1. I can learn to control my emotional expressions.
2. If I want to, I can change the emotional expressions that I have.
3. No matter how hard I try, I can't really change the emotional expressions that I have.
4. The truth is, I have very little control over my emotional expressions.

Demographics:

1. How many EMS organizations do you work for?
2. How long have you worked at your current main EMS job (in years)?
3. How long have you worked as an EMS professional (in years)?
4. On average, how many hours per week do you work as an EMS professional?
5. What is your average EMS shift length (in hours)?
6. How old are you?
7. What is the highest level of education that you have completed?
    - Options: Didn't complete high school, High school graduate/GED, Some college, Associate's Degree, Bachelor's Degree, Graduate Degree
8. Which of the following best describes the community in which you do most of your work as an EMS professional?
    - Options: Rural area (less than 2,500 people), Small town (2,500 - 24,999 people), Medium town (25,000 - 74,999 people), Large town (75,000 - 149,999 people), Mid-sized city (150,000 - 499,999 people), Suburb/fringe of a mid-sized city, Large city (500,000 people or more), Suburb/fringe of a large city
9. In what state do you perform most of your EMT work?
10. What is your gender?
11. What is your ethnicity?

Appendix D

Weekly (Time 1-10) Diary Measures

Please note that the weekly survey measures were the same across the weeks.

Traumatic Event Exposure

Did you experience or witness a troubling or potentially traumatic event while on a call with a patient over the past 7 days (e.g., witnessed the death of a child, got injured while on a call, encountered an elderly person who was severely neglected)? ***If so, p****lease describe the most troubling event that you experienced or witnessed while on a call over the past 7 days*.

Otherwise, ***if no troubling events have occurred while on a call over the past 7 days***, please select the option "No, I did not experience a troubling event at work this week".

When answering this question, please only describe one troubling event. Note that if more than one troubling event occurred this week, you will have the opportunity to describe the additional events later in the survey.

1. Yes, I did experience a troubling event at work this week (please describe below):
2. No, I did not experience a troubling event at work this week

Emotion Suppression

Please indicate the degree to which you agree with the following statements. Specifically, think about how often you have engaged in the following behaviors **while on calls with patients over the past 7 days** (1 = *strongly disagree*; 5 = *strongly agree*):

While on a call with patients…

1. … when I wanted to feel more positive emotions (such as joy or amusement), I changed what I was thinking about.
2. …I kept my emotions to myself.
3. …when I wanted to feel less negative emotions (such as sadness or guilt), I changed what I was thinking about.
4. ...when I was feeling positive emotions, I was careful not to express them.
5. ...I controlled my emotions by not expressing them.
6. ...I controlled my emotions by changing the way I thought about the situation I was in.
7. ...when I was feeling negative emotions, I made sure not to express them.
8. ...when I wanted to feel less negative emotions, I changed the way I was thinking about the situation.

Burnout/Work Exhaustion

Please indicate the degree to which you agree with the following statements (1 = *strongly disagree*; 5 = *strongly agree*)

Over the past 7 days…

1. ...I have found it hard to work with patients and/or their family members.
2. ...it has drained my energy to work with patients and/or their family members.
3. ...I have found it frustrating to work with patients and/or their family members.
4. ... I have felt that I give more than I get back when working with patients and/or their family members.
5. ...I have been tired of working with patients and/or their family members.
6. ...I have sometimes wondered how long I will be able to continue working with patients and/or their family members.

Anxiety

Please rate the degree to which you felt or experienced the following emotions over the past 7 days (1 = Not at all; 5 = A great deal):

1. Anxious
2. On edge
3. Uneasy

Depression

Please rate the degree to which you felt or experienced the following emotions over the past 7 days (1 = Not at all; 5 = A great deal):

1. Sad
2. Hopeless
3. Discouraged
4. Blue

Sleep Quality

1. Over the past 7 days, how would you rate your sleep quality overall? (1 = *very bad*; 4 = *very good*)

Rumination

Over the past 7 days, how often have you…

1. ...replayed negative work events in your mind even after you leave work?
2. ...found yourself preoccupied with the negative aspects of your job even after you leave work?
3. ...thought back to the bad things that happened at work even when you're away from work?
4. ...kept thinking about the negative things that happened at work even when you're away from work?

Appendix E

Institutional Review Board Exemption Letter

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

September 12, 2016

Stephanie Andel
Psychology
4202 E. Fowler Avenue
PCD4118g
Tampa, FL 33620

RE: **Exempt Certification**
IRB#: Pro00027767
Title: The Impact of Traumatic Event Exposure on EMTs: A Weekly Diary Study

Dear Ms. Andel:

On 9/12/2016, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF HRPP policies and procedures.

Please note, as per USF HRPP Policy, once the Exempt determination is made, the application is closed in ARC. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have

any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, Ph.D., Chairperson
USF Institutional Review Board